The RUBBER AGE

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LATE NEWS of the Industry

Litchfield and Firestone Voice Optimism for the Industry in 1933

Litchfield Looks for Slight Improvement by Spring—Outlook Never More Stimulating, According to Firestone, Despite Possible Further Price Deflation and Curtailed Buying in 1933

DECLARING that "generally speaking, 1932 has been a year of near-demoralization in the rubber industry," P. W. Litchfield, president of Goodyear Tire & Rubber Company, said he believed the new year would bring helpful changes.

"Various agencies for the relief of depression are functioning in a manner that gives some promise," Litchfield said. "I look for some improvement in the spring, but not marked. Unemployment relief is the country's greatest need.

"There have been many important developments in 1932. I have in mind, for instance, introduction of pneumatic tires for farm tractors. The new tire adds at least 100 per cent to tractor efficiency. Also, we have brought out the pneumatic tire for new style railroad coaches."

Litchfield added that his company possess patent rights for production of a certain kind of rail coach tire in this country. He said that during the past year Goodyear had produced a surprising number of the tires for several lightweight passenger coaches in use on Eastern railroads. Goodyear also recently introduced a new type tire for farm tractors. Firestone also has introduced tractor and railway tires.

The rubber industry faces price deflation and curtailed buying during 1933, but nevertheless the outlook has never been so stimulating, according to a summary of the rubber situation by Harvey S. Firestone, Sr., chairman of the board, Firestone Tire & Rubber Co.

Mr. Firestone said, in part: "Predicting for the rubber industry, in these uncertain days, is almost as speculative as crystal gazing. Like most other basic commodities, however, rubber is in the throes of a momentous change. And change to many people is a process they dislike to experience.

"The year just closed has been a fairly true index of the extent of this change. Automobile production has been curtailed with a resultant lesser demand for tires as standard equipment. This has worked a hardship on those companies who depend on this type of business to keep factory wheels turning and men busy in gainful occupation. But to those concerns who realize that change is inevitable and that markets and demand are constantly in a state of flux, the present situation resolves itself into a release of creative energy.

"Never before has the rubber outlook been so stimulating. While volume from ordinary sources is retricted and a return to normal is problematical for some time, nevertheless, rubber is as basic as steel, sugar or cotton. Our manufacturing facilities are much in excess of present-day needs for tires. Shall we accept the receding wave of normal demand for rubber, or shall we take stock of our potential strength and make every effort to build a demand in keeping with our ability to produce?

"Just how large our total volume in the rubber industry will be in 1933 is still problematical."

New Capital Readjustment Plan of Kelly-Springfield Explained by Lalley

NEW securities provided for in the capital readjustment plan of Kelly-Springfield Tire Company will be apportioned and ready for delivery to certificate holders on and after January 3. Certificates of deposit will be exchanged at the principal office of the depository, Central Hanover Bank & Trust Company, 70 Broadway, New York.

"The capital readjustment has been completed," W. H. Lalley, president, Kelly-Springfield Tire Company, states, "without any new financing, and has given the company an outstanding balance sheet. The following results have been obtained by the readjustment: Elimination of approximately a $10,000,000 deficit; elimination

of about $7,250,000 of patent rights and good-will items; creation of a surplus in excess of $2,600,000; elimination of all accrued obligations for dividends and sinking funds on preferred shares; reduction of over $181,000 per year in carrying charges after including fixed obligation of $177,000 per year, interest on ten-year 6 per cent notes.

"The company has been free of all bank loans since September 1, 1931, and current ratio as of October 31, 1931, was 15 to 1. Statement of operations for the first six months of the current year showed a profit of $57,101 after all charges including interest requirements for the ten-year 6 per cent notes.

"Definite economies in operation, begun in May, 1931, have been continued during 1932, so that the cost of operations in manufacturing, sales, distribution and administration, and in all other departments have been brought to the lowest level in the company's history."

Consolidated statement of Kelly-Springfield Tire Company, as of October 31, 1932, shows total assets of $15,171,932 and surplus of $2,636,025. Current assets, including $1,170,803 cash, amounted to $8,040,704 and current liabilities were $540,171.

Consolidated balance sheet of Kelly-Springfield Tire Company, as of October 31, 1932, after giving effect to the provisions of consolidation agreement dated August 23, 1932, follows:

Assets: Plant, equipment, etc., after depreciation, $6,548,874; cash, $1,170,803; accounts and notes receivable, $3,854,918; inventories, $3,014,983; investments at cost, $485,770; deferred charges, $96,584; total, $15,171,932.

Liabilities: $6 preference stock, represented by 51,837 no-par shares, $5,183,700; common stock, represented by 741,861 shares of $5 par value stock, $3,709,305; ten-year notes, $2,721,500; trade accounts payable, $182,269; balances due customers, $7,003; accrued taxes, wages, etc., $247,649; interest payable, $103,250; reserves, $381,230; surplus, $2,636,026; total, $15,171,932.

Plans Almost Completed for Merger of Four N. Y. Commodity Exchanges

MEMBERS of the four New York commodity exchanges involved in the proposed merger into one large exchange have expressed enthusiastic approval of the plan at meetings held the last part of December.

New York Hide Exchange members met December 23rd after the close of the market and, informally, voted unanimously in favor of the merger. Members of the National Metal Exchange and the National Raw Silk Exchange met during the same week and were practically unanimous for the plan.

The board of governors of the four exchanges will meet early in January to decide upon the dates at which the formal vote will be taken by the members of each exchange on the merger. These meetings probably will be held around the first of February, in order that foreign members of the exchanges may have ample time to send in proxies.

After the members of all the exchanges vote their approval of the plan, the next step will be the mechanical consolidation into a single operating unit on one floor. Tentative plans, already under way, insure the speedy accomplishment of this, once the merger has been officially approved.

The proposed name of the consolidated exchange is Commodities Exchange, Inc., and its combined membership will be around 1,000. There will be four trading rings at which futures in six commodities will be purchased and sold—rubber, silk and hides at three rings, respectively, and silver, copper and tin at the fourth ring.

Numerous requests for memberships in the exchange, in the event that the merger is approved, have already been filed by Stock Exchange and commodity brokerage houses, which are not members of any of the four exchanges involved in the consolidation.

Kelly-Springfield Plans Intensive Sales Program for Coming Year

KELLY-SPRINGFIELD Tire Company has completed plans for 1933 for the most comprehensive sales campaign ever undertaken by the company, says William H. Lalley, president. The main feature of the campaign, Mr. Lalley adds, will be an aggressive newspaper advertising program to be launched early in the new year.

Preparatory to this activity, company sales executives have held a nation-wide series of meetings with the sales force and with distributors in all key markets.

"At no time in our history," Mr. Lalley states, "have these organizations been so well trained or so well equipped to launch a concerted and effective drive for increased business.

"The Kelly-Springfield company has just completed reorganization of its capital structure, which in no way involved any new financing or change in personnel and is now prepared for a new and revived business toward which the company confidently looks. Operating costs have been reduced to the lowest by far in the company's history.

"The company up to the present has had a deficit of approximately $10,000,000 and has been carrying a patents and good-will item of more than $7,250,000. Under the new conditions the deficit has been eliminated, good-will and patent items have been written down to $1, and a surplus in excess of $2,600,000 has been created.

"We have a healthy balance sheet, and are in an excellent financial position. The decks have been cleared for action. That action, as stated, will take the form of a real drive for business. Our intensive advertising campaign will start early in the new year and, in my opinion, will be one of national significance. We expect to use all the newspaper and magazine space that good business judgment will permit.

"In that connection, we have something new to advertise. Kelly-Springfield has made a real advance in tire design and construction, as has been demonstrated by our new registered tire, the "Fatigue-Proof," which we are now manufacturing and which we regard as revolutionary. The development of this new tire has required more than one year, and is backed by 39 years of manufacturing experience.

"As to the outlook for the future, I am making no prophecy. All we are concerned about at present is that we have emerged with an outstanding financial position, reorganized our forces and mapped out an advertising and selling campaign that should be productive of a large business volume."

Association Sponsors Bill to Protect Industry from Foreign Competition

IT IS well known that there has been a considerable increase in importations of certain lines of rubber manufactured products into the United States during this year, particularly from Czechoslovakia and Japan.

Competition of imported articles in the domestic market has been most serious with respect to rubber and canvas footwear, beach balls, various water toys and erasers. It is also understood that Japanese manufacturers, par-

ticularly, expect to ship to this market during the coming year such articles as rubber bathing caps and hot water bottles and there is every reason to believe that domestic rubber manufacturers of other lines of rubber goods may be confronted with this form of competition.

This competitive situation is made possible because of the depreciation of foreign currencies against which there is no protection under present laws and also because the present tariff duties cannot possibly bridge the difference in production costs here and abroad as intended by Congress upon enactment of the Tariff Act of 1930.

The Rubber Manufacturers Association has been in close contact with the United States Tariff Commission and the Treasury Department in order to secure for its members the maximum tariff protection obtainable under existing laws and administrative authority of government departments; however, the relief that can be obtained under present laws in view of existing conditions of international currencies is limited.

As a result of the coordination of the efforts of other industries, including the rubber industry, adversely affected by the marketing of foreign products in the United States at less than domestic production costs, there has been introduced in the House of Representatives Bill H. R. 13790, which has been referred to the Ways and Means Committee of the House.

This Bill is an expression of the belief of the coordinating industries that competition of low priced foreign merchandise from countries having depreciated currencies can only be curtailed, if not entirely eliminated, through statutory provision for a graduated tax applicable to tariff duties in the ratio that the currencies of such countries are depreciated.

Through the coordination of affected industries a strong effort will be made to have H. R. 13790 favorably reported out of the Ways and Means Committee, following which every effort will be made to have it receive a favorable vote in the House of Representatives before the present short session of Congress adjourns on March 4th.

Chicago Rubber Group to Meet on Jan. 13 and Hear Depew on Zinc Oxide

THE College Inn of the Hotel Sherman, Chicago, Ill., has been reserved together with the entire Ben Bernie Orchestra and stage show, by the Chicago Rubber Group, A. C. S., for the evening of January 13, 1933, for what they state will be the biggest and best meeting ever held by the group. Dinner will precede the festivities and the reading of Dr. Harlan A. Depew's paper, and will start at 6.30 p. m. Mr. Depew, so well-known among rubber chemistry circles, will speak on "Zinc Oxide, Its Properties in Rubber and Methods of Manufacture."

Further entertainment will be provided by Eastman Dryden, well-known big game hunter, explorer and lecturer, who will take the party into the jungles with him on his moving picture travelogue.

Reservations can be secured from Ben W. Lewis, secretary of the Chicago Group, care of Wishnick-Tumpeer, Inc., 365 E. Illinois St., Chicago. The price is $1.50 per plate.

A Correction

In publishing in THE RUBBER AGE, of December 25, 1932, the abstract of W. J. R. Hauser's paper, presented before the New York Group of the Rubber Division, A. C. S., Mr. Hauser's business connection was erroneously given as being vice-president of Heveatex Corporation of America. In correction of the error we wish to call attention to the fact that Mr. Hauser is vice-president of Revertex Corporation of America, 40 Rector Street, New York.

*Crude Rubber in Review—1932**

By CLIFFORD C. JOHNSTON
Johnston Rubber Co., New York

CRUDE rubber fluctuated between a low of 2⅝c and a high of 4⅝c during the past year. The interval between the low point on June 28 and the high point on August 30 was only two months. The major rally in August, which continued during the first two weeks of September, was preceded by a rally of smaller proportion which reached a high of 4⅜c on May 7 and which lasted only during the week that an import tax on rubber was being given serious consideration by the Senate Finance Committee.

A bullish feature during the year was a decrease in shipments from producing countries to a total of 690,000 tons as compared with the 1931 total of 790,000 tons. The aggregate of world's absorption of the commodity did not differ materially from that of a year ago, the totals for both 1931 and 1932 being close to 670,000 tons.

Supplies Reduced

Furthermore, there has not been the reduction in world's stocks that was anticipated by leading factors in the rubber trade. The figure representing total stocks at the end of last year of 624,000 tons was reduced 15,000 tons by a correction at the end of the first half of the year in the official stock figures issued by the British Malayan Government. The excess of production over consumption, however, was sufficient to overcome this reduction and to bring about an increase in the world's stock figures of over 10,000 tons, the December 31, 1932, figure being approximately 635,000 tons.

Seven-Year Bear Market

However, the present price of rubber is probably close to the nadir of a bear market in the commodity that started in 1925 and has continued since then with few interruptions. Assuming that $1.25 rubber was a fictitious value placed upon the commodity because of British export restrictions which were instituted three years previous, consideration should be given to the fact that in 1921, when rubber reached its then all-time low of 11¾c, this level was regarded as so unreasonable as to encourage the British Government to lend its support to what proved to be an unreasonable scheme of export restrictions.

The student of rubber prices will recall that 11¾c was then the culmination of a previous bear market that began in 1917 from a level of 88c a pound. It should also be recalled that rubber, unlike other commodities, declined rather than advanced during the World War.

Rubber and Wheat

Plantation rubber during its comparatively short history of twenty-two years rose (in 1910) almost as high as did wheat prices during the war and to a price five times the high prices paid for cotton during the war and has dropped 99 per cent from its 1910 level (declining from a yearly average figure of $2.06 during that year to 2⅝c during the past year) in three bear markets, 1910-14, 1917-21 and 1925-32.

In other words, the bullish feature is the price of the commodity. One cannot anticipate what improvements in general conditions or in the rubber industry itself will adjust the balance so that the rubber producer is able to at least make a living from the tapping of rubber trees, but it is reasonable to expect that during the ensuing year there will be corrective steps taken that will enhance the value placed upon the commodity.

*Reprinted from *Journal of Commerce*, New York, Dec. 31, 1932.

The Impregnation of Textiles With Latex*

By W. J. R. HAUSER
Vice-President, Revertex Corporation of America

THE information I will give you in the following paper is based on research work and experiments carried out by the Colloid Chemical Laboratory of our organization in Europe. The applications of rubber latex in combination with textiles are so numerous and vary so much that I have decided to restrict myself to one problem only—namely the problem of actual impregnation of textiles with rubber latex.

The general use of rubber latex in combination with textiles is probably as old as our entire knowledge of the existence of rubber. We already find references to coating, water-proofing and doubling of fabrics with rubber latex in narratives of the first French and Spanish explorers of South America, dating back to the first years of the sixteenth century. Water-proofed garments and a type of canvas shoe produced by the West Indian natives with the use of rubber latex were brought to Europe in the eighteenth century. Back in 1759 the government of Para presented to the king of Portugal a water-proofed suit manufactured by spreading latex onto the fabric base and allowing it to dry by exposing it to the sun while keeping it stretched, in order to avoid unequal shrinkage. It has also been found that the natives of South America knew the value of sulphur and accelerating chemicals when admixed to rubber latex and then drying the deposited film in the sun long before "vulcanization" was actually discovered.

It seems rather surprising that, under these circumstances, latex has not been used to a far greater extent in combination with textiles than it has up to the present time. I think the best explanation for this is the following:

Latex as it comes from the rubber tree is a rather unstable liquid which could not be stored or transported for any length of time. When finally ways and means of preserving latex with ammonia or the like became known in 1853, the rubber industry had already progressed too far on other lines, such as naphtha solutions of rubber, and consequently owing to the extra freight on latex caused by its water content, the use of latex was not sufficiently interesting to the somewhat conservative rubber industry. This situation only changed a few years ago when it was found possible to make bulk shipments of latex as well as to concentrate latex. Latex now became available in larger quantities, but still the industries concerned hesitated to make immediate use of the increased latex supply. Surely many of you gentlemen have wondered what might have been the actual reason for this attitude. It could not possibly be pure conservatism only. Hygroscopy, impossibility of cold curing, etc., were regarded disadvantageous. However, there was one point which sometimes has been mentioned as a most serious drawback when using latex. If latex or latex compounds are applied to the fabric, the resultant rubber film can be peeled off the fabric base more or less completely and fairly easily. This observation has stood in direct contrast to literature and patent references where it is claimed that latex allows a far more complete impregnation than is possible with, for example, rubber-naphtha cements.

Very thorough researches into the question of impregnability of fabrics with latex have recently definitely proved that the observations of the practical man in the factory are correct and that the statements in literature are the results of erroneous assumptions. If plain latex of suitable concentration, which may or may not contain vulcanizing ingredients, etc., is used for impregnation purposes, we will find that all we get is a more or less uniform coating but *no* penetration of the rubber into the inside of the fibre.

Investigators several years ago showed in a most illustrative experiment that two wicks, one placed in a rubber-gasoline solution, and the other in latex, showed entirely different behavior in respect to their absorbing ability of the liquids. It was found that after a short time the rubber had penetrated through the wick which had been placed into the rubber-gasoline solution, whereas the wick placed into the latex showed no appreciable signs of rubber penetration. However, the latex left in the vessel showed, after some hours, an increased concentration in its rubber phase, in proportion to the amount of water which had been absorbed by the wick. The reason for this phenomenon is the fact that the rubber in a rubber-gasoline solution consists structurally of vastly disaggregated molecules or micelles which penetrate into the finest interstices of the fibre by capillary action. In the case of latex, however, where we are dealing with individual rubber particles of generally microscopical size, these will be deposited on the outer surface of the filaments and coagulate thereon, owing to the absorption of their dispersing medium by the fibre.

This effect is even more pronounced in fabrics which naturally contain water repelling substances, such as waxes, fats, etc., which are more or less soluble by such solvents as gasoline. I think that this explanation is sufficient to explain the peeling-off effect mentioned before.

Realizing that the rubber deposited from latex has practically no penetrating ability it is obvious that any unevenness of the fabric surface will be accentuated, thus producing a surface which compared with a fabric rubberized with gasoline cements has a rough and unsatisfactory finish. Further, taking into account the comparatively tough and dry surface of latex rubber, known to those skilled in the art, it will be appreciated that the finished product will be of a somewhat harsh feel and will not permit the application

1-6 THREADS

Rubber Latex Deposit

Figure 1

*Paper read before the meeting of the New York Group of the American Chemical Society, Rubber Division, on December 14, 1932.

of those finishing methods which generally give the finished goods the velvet-like feel required by the public.

Various methods have been suggested for testing the degree of penetration of rubber into the fibre. The method of sulphuric acid treatment which we have developed was described in the October, 1932, issue of *Rubber Chemistry & Technogoly* (vol. 5, No. 4) on page 686.

The results of the experiments of our laboratory as to the degree of penetration or impregnation obtainable when using different methods can be summarized as follows:

Rubber-gasoline solutions readily penetrate the innermost parts of the fibres. Frictioned stock does not penetrate into the fibres on application, but owing to its broken down condition, it has the property of flowing during hot press curing, and of entering into

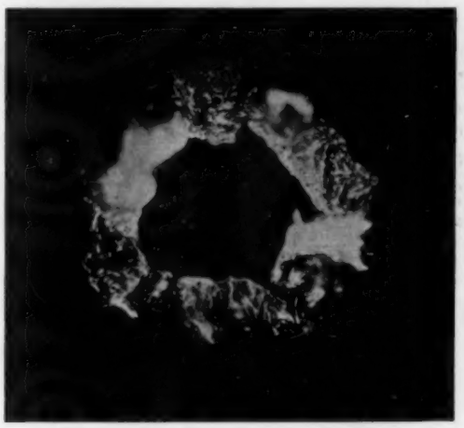


Figure 2

the cord. On the other hand the unbroken structure of latex rubber exhibits no flow effect and therefore the degree of impregnation is not changed by the cure. The aforementioned will explain the actual differences in impregnations with the use of ordinary rubber-gasoline cements, milled friction stock and ordinary latex.

The first illustration (Fig. 1) will show a coating of rubber latex around a single cord, consisting of six individual strands. You will note that the cord is completely surrounded by a rubber surface. The next illustration (Fig. 2) shows the result of a sulphuric acid treatment onto the same piece of cord. The cotton, which was only covered but not actually impregnated, has been completely removed by the sulphuric acid treatment. Of course, when using cords of a loose twist it will be possible to deposit rubber between the strands to some extent as can be seen in Figure 3. However, such a pro-

Figure 3

cedure not only reduces the maximum strength of the cord but it cannot by any means be compared with an actual impregnation of the individual fibre such as is achieved, for example, with a naphtha rubber solution. Figure 4 shows a cord which has been impregnated with a rubber-gasoline solution and then submitted to a sulphuric acid treatment. It is to be noted that the *entire* cord has resisted the action of the sulphuric acid, because the fabric was actually impregnated.

Considering the facts I just mentioned, you may ask why such importance has been attached to the use of rubber latex in combination with textiles. The reason is the following:

Rubber, when masticated, undergoes a molecular disaggregation coupled with an oxidization process. The molecular size of the hydrocarbon in its natural state is decreased resulting in rubber of greatly decreased elasticity and strength. The following step of dissolving the rubber with naphtha will further disaggregate the hydrocarbon and bring about the well-known adhesive properties of naphtha solutions. These adhesive properties will only disappear after vulcanization has been completed.

On the other hand, the unchanged strength of latex rubber, its excellent aging properties, etc., would make it a most valuable liquid for impregnating purposes, provided, of course, that complete impregnation could be assured. The use of rubber latex, owing to its somewhat hygroscopic properties would also permit the retention throughout the fibres of a far more uniform moisture content, which, as you know, is to a certain extent essential for the maintenance of the original strength of the fibre. The Colloid Chemical Laboratory of our organization in Europe is about to publish in the *Transactions of the Institution of Rubber Industry*, London, England, the first results of very systematic researches toward complete impregnation of cords or finished woven fabrics with rubber latex, without the use of any special or complicated machinery.

Probably it is not necessary to obtain complete impregnation of the fabric for water-proofing purposes. However, it is essential that at least perfect adhesion of the rubber coating to the fabric

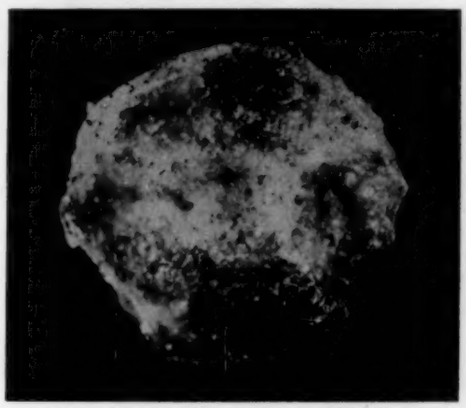


Figure 4

is obtained. Naturally, anchorage of the coating will be better if the rubber can penetrate more readily into the fibre.

Considerable progress in the chemistry of fibrous materials as well as in the knowledge of latex in general has been made during recent years and consequently we are today not only in possession of substances which when added to latex in very small quantities will considerably change its colloidal dispersability, this leading to considerably increased penetrability, but we have also learned how to open the fibres to an extent which will allow the rubber from rubber latex to penetrate more readily into the fibres.

Our laboratory has been able to ascertain that the degree of impregnability depends largely on the surface tension of the applied latex. Increased penetrability is therefore obtained if substances of high surface activity are added to the latex such as certain wetting agents of the Nekal types. Substances which besides have an opening-up effect on the fibre itself or which have a dissolving influence on the water-repelling properties of certain ingredients present in the fibre are even better. Figure 5 shows a micro-photograph, showing a single cord impregnated with latex containing a very small amount of Praestabit-oil. You will see that although the degree of impregnation is found to be considerably improved, the single strands making up the cord have remained untouched and

Figure 5

could be removed by a sulphuric acid treatment. The second part of Figure 5 shows a complete impregnation of the cord, achieved by increasing the amount of wetting agent added to the latex. The next illustration (Fig. 6) shows a cord which has been first impregnated with Igepon T solution and which has then been passed through a latex bath. The cord has been opened up to some extent but each individual strand is completely impregnated with latex. The last illustration (Fig. 7) shows a completely impregnated cord. For this impregnation was used a compound consisting of concentrated rubber latex and Igepon A.P. The impregnation is perfect, a result which hardly could be anticipated considering the many failures which have been reported so far.

Regarding the various wetting agents used, I would like to draw your attention to the fact that experiments have shown that it is not the same whether the wetting agent is added to the latex compound or whether such as is the usual procedure in the textile industry, the wetting agent is used prior to the treatment. In the latter case although fairly satisfactory impregnation can be obtained the result is not comparable with the impregnation achieved when mixing the wetting agent with the latex. An exception to this rule, however, seems to be the wetting material Igepon T. It has been found that this very efficient wetting agent will in contrast to the behavior of Igepon A.P. give a more or less complete impregnation if the fibre to be impregnated is soaked in a diluted Igepon T solution prior to its treatment with the latex compound.

All the experiments which I have mentioned have been carried out with the impregnation of single cords or woven fabrics with comparatively loose weaving and not to great thickness. Just as impossible as it is to obtain perfect impregnation of dense woven and compact fabrics of considerable thickness with the use of organic rubber solutions, it remains equally impossible, at least for the time being, to impregnate such fabrics with the methods mentioned before. However, there are certain processes which promise to overcome these difficulties and allow impregnation of such fabrics by the use of latex. Tests have shown that it is possible to impregnate throughout, ropes of one inch diameter and soles of about one-fifth inch in thickness. Since this has been achieved latex has already gone a step beyond any possibility of the old processes.

I hope that these results will have convinced you that the combined knowledge of latex and colloidal chemistry have enabled the solving of an important problem and have removed the obstacles in the way of using latex for impregnating, water-proofing and other processes in combination with fabrics, etc. It is possible to obtain today at least equally good impregnation with latex as is possible with gasoline cements or by frictioning.

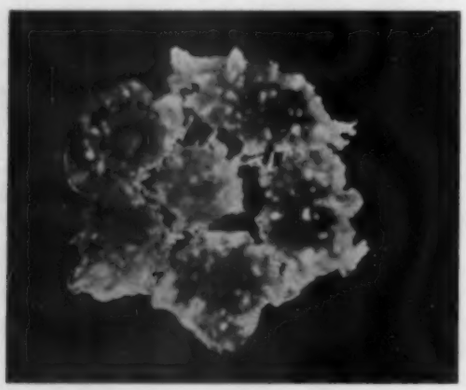


Figure 6

As I mentioned before, several papers regarding the impregnation of fabrics with latex will appear shortly in the *Transactions of the Institution of Rubber Industry* as well as in the German trade journal *Kautschuk*. Undoubtedly these articles will also appear at a later date in our trade journals. I have offered you the aforementioned information about some of the past and recent research results of the Colloidal Chemical Laboratory of our organization in Europe without any reservations because our organization is still a non-believer in monopolizing technical developments. I sincerely hope that others, too, will soon accept this policy in the interest of the promotion of rubber in general and latex in particular.

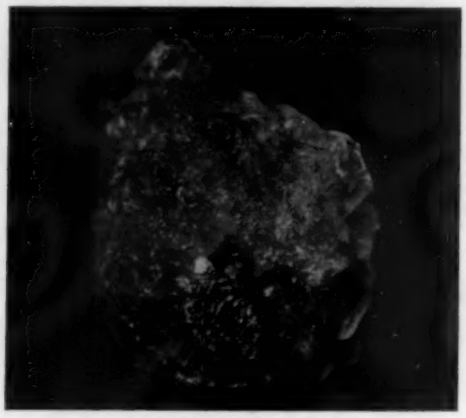


Figure 7

Bardol*.
Rubber Softener

BARDOL, a rubber softener, possesses unusual dispersing properties due to its solubility in rubber and its ability to easily wet pigments. Its dispersing action is not only desirable in pure gum stocks for improvement in quality but is also of considerable importance in highly compounded stocks such as tire treads, mechanicals, etc.

In tire treads, Bardol gives a high tensile and modulus. It also gives excellent resistance to abrasive wear and to tear, which can be directly attributed to its dispersing action. Laboratory and service tests show that from 3 to 9 per cent. of Bardol on the rubber content can be advantageously used. Exceptional factory conditions often require variations in the softener content. This condition can be met with Bardol as no radical adjustment is necessary to preserve the proper balance in the compound, nor are the physical properties of the tread changed. Furthermore, Bardol is slightly accelerating, which counteracts the retarding action of fillers.

Bardol is particularly adapted to friction stocks, such as tire carcass and belting. In inner tubes and molded goods it materially improves the resistance to tear. From 2 to 5 per cent of Bardol on the rubber content may be advantageously used in these types of stocks.

The dispersing action of Bardol is also of value in other types of stocks such as heels, soles, matting, air-bags, tire beads and other miscellaneous compounded stocks. Tests have shown that it shortens the milling time regardless of whether the batch is mixed on an open mill or in a Banbury-type mixer.

*Reg. U. S. Pat. Off. by The Barrett Company, New York, N. Y.

The Use of RUBBER *in the* PRINTING INDUSTRY

Applications of Rubber Are Extending to Many Phases of the Printing Art—Use of Latex Gaining

AT a recent meeting of the London section of the Institution of the Rubber Industry, the principal speaker was George L. Riddell, Ph.D., B.Sc., A.I.C., technical director of the Printing Industry Research Association, who read a paper entitled "The Use of Rubber in the Printing Industry." The discussion was opened by Dr. L. A. Jordan, director of the Research Association of the British Paint, Color and Varnish Manufacturers, and B. D. Porritt, M.Sc., F.I.C., F.R.S.E., F.I.R.I., director of the Research Association of British Rubber Manufacturers. An informal dinner to entertain the chairman of the meeting, Sir Herbert Wright, K.T., and the lecturer, preceded the lecture, and there were present a large and distinguished gathering of members of the Institution—experts all of them in some branch of the very wide field of rubber manufacture. There was also a sprinkling of printers including J. R. Riddell, principal of the London School of Printing; L. J. Cumner, assistant secretary of the Federation of Master Printers; P. D. Michael, secretary of the Home Counties Master Printers Alliance, and J. A. Stembridge, of Leeds.

Sir Herbert Wright, having introduced Dr. Riddell as a distinguished, though young, scientist, Dr. Riddell said that this was the first occasion on which the technical problems common to the printing and rubber industries had been discussed in public by both parties. The printing industry could lay claim to an existence of about 450 years. It was surprisingly large today, being the seventh largest industry in Great Britain as regards capital invested. The industry was developed on largely empirical lines and when the scientist entered the industry he found many problems. The printer used a large field of raw materials of definitely complex nature. Cooperation was most desirable between the printer and those who supplied the raw materials. Rubber in the past few years had been used more and more extensively. He hoped one of the outcomes of that meeting would be closer contact between the technical staffs of the two industries. Only a small fraction of the possible uses for rubber in printing had been developed.

Various Printing Processes Using Rubber

He went on to indicate the printing processes in which rubber was now used, the conditions which had to be met, and some of the more common defects. With the aid of suitable lantern slides, Dr. Riddell explained that printing processes were divided into three kinds according to the nature of the surface, namely letterpress, lithographic, and intaglio. Rubber was used in each of those three processes. Letterpress was the best known process, the one by which magazines, etc., were produced, and he explained fully this method of printing. He also mentioned a flat-bed cylinder machine, explained the making of half-tone blocks, and also duplicating, by electrotyping or stereotyping.

The reason, he said, for his long explanation of the letterpress process was that fairly recently rubber plates had been used instead of metal plates. Rubber plates possessed certain advantages as a printing surface. Briefly these were that one could print from rubber plates on rough or smooth paper; the results obtained were pleasingly characteristic; less ink was used, and good solid colors obtained; occasionally one found that metal plates would cut the printing rollers, whereas rubber plates obviated this; and in some instances rubber was cheaper than metal.

The methods of making the rubber plates were hand-cutting and molding. In the hand-cut method, one took a sheet of thin rubber with a fabric backing, mounted on a thin sheet of aluminium. The design to be reproduced was transferred on to the rubber, and the cutting was done with a special knife, similar to that used for linoleum cutting. The rubber must possess two particular qualities, it must cut easily, and be easily detachable from the fabric backing. It must also be uniform in thickness and perfectly smooth. There were obvious limitations to hand-cut work. The designs had to be simple.

The molding method was similar to the stereotyping process, a matrix being obtained from which the rubber plate was molded. A sheet of semi-cured rubber was placed on top of the matrix, and put in a vulcanizing press, and the rubber vulcanized. The resulting plate was removed from the press and trimmed at the edges and mounted on wood or metal. Where the various colors had to fit closely each plate must be of the same and correct size; therefore the plates were molded and vulcanized direct on to the zinc base, preventing distortion.

Inks for Rubber Plates

When rubber plates were first introduced, continued Dr. Riddell, special water inks were used. These had disadvantages. First, they were not water-proof, and secondly the rollers ordinarily used by the printer had to be treated before these inks could be used. Attempts were made to use oil inks, but these rapidly caused deterioration of the rubber plate. This was some five or six years ago, since when the quality of the rubber had improved considerably. The early plates absorbed linseed oil, resulting in their becoming sticky, hard, and glazed. The properties of a good rubber plate, he said, should include good ageing qualities in the presence of oil inks, it should not be too hard or too spongy, and should be able to stand the necessary pressure.

Rubber plates required from the printer different treatment from that given to metal plates. The whole secret of printing from rubber plates was that a very slight printing pressure was required. If the same pressure were used with rubber as with metal, the rubber would expand and the ink would be squeezed out at the edges. The amount of ink required was also less for printing from rubber than from metal. The limitation of rubber plates, apart from possible deterioration, was that they could not be used for the finer half-tone screen work. Work had been produced

*Reprinted from the *British and Colonial Printer*, London, Nov. 17, 1932, with acknowledgment.

from rubber plates with screens of a fineness between 60 and 80 lines to the inch.

Experiments had been made to make rubber plates by electrolytically deposited rubber. That was, however, still in the experimental stage, and there were several big difficulties, the chief being that during the drying and vulcanizing the rubber contracted considerably. Attempts had also been made to coat metal printing plates with rubber, though, at present, he could not quite see the utility of that.

One of the important uses of rubber plates was in printing bags. Dr. Riddell here exhibited examples of bags so printed. This process, he said, was a modification of the ordinary letterpress process and, to illustrate, a slide was shown of a two-color machine for bag printing. The inks used for that purpose were dyestuffs dissolved in organic solvents.

Continuing, Dr. Riddell said that the most important use of rubber had been for the inking rollers on newspaper printing presses. Such a roller consisted of a steel shaft surrounded by rubber. Describing the process of newspaper printing on a rotary, he mentioned that the presses were run at a very high speed, and the old composition rollers had certain disadvantages, which the introduction of rubber rollers had overcome. The printing from rollers was also sharper and cleaner. Unfortunately, however, rubber rollers were not an unqualified success. They were expensive compared with composition rollers, and the high speed and contact with the printing ink had to be withstood.

News ink, he said, was quite different from ordinary printing ink; it consisted of carbon, rosin oil, and mineral oil. Such inks dried by penetration into the paper, not by oxidation, so no driers were required. The rubber rollers absorbed the mineral oil and swelling resulted. If the swelling was uniform the fault was not serious, but if the roller swelled more in one place than another it became practically useless and had to be reground. This was their chief disadvantage. The reports obtained on rubber rollers were very mixed. He instanced one printing concern which used rubber rollers. Certain of them during two years had needed no attention beyond occasionally resetting, while others had had to be ground down four or five times during that period of time. It was difficult to get supplies of a uniform quality. It would be an excellent thing for the printing trade if directions could be given for the use and care of rubber rollers.

To be ideal, rubber rollers should have a smooth surface, should not swell when permanently in contact with mineral oil, and have a large degree of resiliency. The rollers were often subjected to close contact with the plate, giving poor printing results. Rubber rollers demanded a very light setting; they should just touch the plate and no more. Attempts had been made to use rubber rollers upon flat-bed machines but with no great success. They had a tendency on such machines to slide across the form rather than roll over it.

Rubber Blankets

Coming to rubber blankets, he said they were used on rotary presses. They possessed certain disadvantages. If used to cover the cylinder on which the second side of the paper was to be printed from, they tended to collect wet ink from the first side, resulting in a dirty sheet. That trouble would arise with any type of cylinder dressing, but it seemed to appear more with rubber blankets. The ideal rubber blanket for rotary printing work should be perfectly smooth; the surface should be of correct and uniform thickness; the rubber should not swell in the presence of news ink; and it should not collect wet ink from the printed sheet, giving rise to set-off.

The second printing process in which rubber plates played an important part was lithography. In this process the printing surface was plane. As the name suggested, lithographic prints were originally obtained from stone. Today, however, the majority of work was from thin zinc or aluminium. He explained the process and said that frequently an offset process was used in which the print was transferred to a rubber blanket and then to the paper. An offset-litho machine was shown on the screen and Dr. Riddell indicated the principle.

Offset Process

The offset blanket, he said, was very important indeed, since upon its condition depended very largely the character of the finished print. If the blanket was not satisfactory, poor printing would result. The offset process could be used on rough paper. The rubber offset blanket should have a perfectly smooth surface; and it should be of even and uniform thickness; it should also have a resilient surface; and a long life. During each revolution of the machine a fresh supply of ink was transferred to the blanket, which would in time deteriorate the rubber. The ink contained lead, cobalt, and manganese driers. The most common complaint was that the blankets swelled, and became sticky, hard, and glazed.

Research work on rubber blankets by the Lithographic Technical Foundation of America was mentioned by Dr. Riddell, who said they had found that the swelling of rubber blankets was due to their absorbing linseed oil. The absorbed linseed oil ultimately oxidized very rapidly; simultaneously the rubber oxidized, and the product was a sticky, plastic mass of unknown composition. That substance eventually became hard, and produced the glaze. The American research workers proved, he said, that lead driers were less harmful to rubber than manganese or cobalt. The blanket on a printing press was stretched 5 to 10 per cent, and it was known that rubber stretched to this amount would "age" rapidly. If the tension of the blanket was released when the machine was standing idle, it would seem that the blanket would have longer life. Reliable information was urgently required by the printing industry on those matters, said Dr. Riddell.

One method, he said, of dealing with oxidation would be to use occasionally an anti-oxident at some stage in the printing process. One easy way would be to put it in the washing fluid used for washing the ink from the blanket. This introduced another point. Rubber blankets, printing plates and rollers frequently had to be cleaned of ink, and more rubber had been ruined in the printing industry by the washing fluids than by anything else. Turpentine, he regretted to say, was still used. Benzene or a light petrol was probably the best washer. Even a small amount only of turpentine would make a big difference in the rate at which the rubber would swell. If a suitable solvent were introduced it would save the printing industry hundreds of pounds a year. He again mentioned that general directions for the use and care of rubber would be very helpful.

Photogravure

The third printing process using rubber was photogravure, in which a rubber impression cylinder was used. The inks used were quite thin and dried by the evaporation of the solvents. Occasionally the rubber cylinders deteriorated, but very rarely. The use of rubber in photogravure inks was being experimented with, and an ink was now being made containing a proportion of rubber. These inks were a mixture of cellulose esters and rubber, dissolved in volatile solvents and pigments or dyes ground in. They possessed certain advantages over the usual gravure inks. They were cheaper, dried with a hard and tough surface, and were very stable—not becoming solid if left in the printing machine. He believed the field of rubber inks had hardly been touched. There would be a definite

market for a water gravure ink, providing such an ink were waterproof. It would be worth while experimenting with the use of rubber latex in inks, though he knew there were many difficulties. Rubber latex was beginning to find use as an adhesive in the bookbinding trade, for books which opened flat and note books. Pages could be torn from the center of the latter without the rest of the book coming apart.

In conclusion, he said that rubber was an important raw material to the printer and a field worth the continued attention of the rubber manufacturer. Many other uses could be found for it in the printing industry providing the necessary cooperation between both industries was forthcoming.

The Discussion

Sir Herbert Wright, opening the discussion, said that the lecture had been most instructive. He had had no idea of the many ways in which rubber could be used in the printing industry. He called upon L. A. Jordan for his contribution to the discussion.

Dr. Jordan briefly referred to the rubber blanket and rubber plate, and to the deterioration problem, which he described as the loss of mechanical strength in the rubber from swelling. He imagined that was a general problem in rubber technique. Swelling he considered was primarily a problem of the rubber industry. The rubber manufacturer in the past few years had been successful in causing a marked reduction in swelling. In general terms it looked as if the problem was well in hand from the point of view of the rubber man.

B. D. Porritt, continuing the discussion, spoke of research and cooperation being necessary. The rubber industry, he said, had a wide field of contact, and he expressed gratification that the printing industry had come into the field of interests. No printer could expect his blankets to last satisfactorily if they came into contact with manganese, cobalt, and turpentine. The moral was fairly obvious: that there was a general need for education in regard to the use and misuse of rubber. He hoped consideration would be given by the Rubber Growers Propaganda Committee to the preparation of some simple form of booklet adapted to the printing industry. In conclusion he congratulated Dr. Riddell on his paper, and expressed the hope that the contact made that evening might be of mutual advantage.

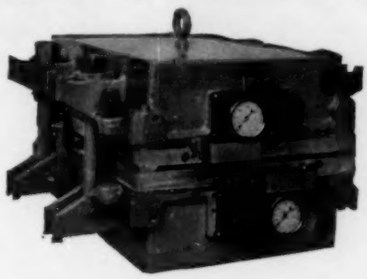
In the general discussion, Dr. Riddell was asked to give a definite ruling as to where rubber rollers should be used and should not be used. In reply he said that this depended upon the roller itself up to a degree. If the roller was not affected by linseed or driers he saw no reason why it should not be used on lithographic machines. As a general rule he said that wherever they had linseed oil and inks that dried by oxidation the rubber roller might suffer. He had no doubt rubber could be made resistant to linseed and driers, and he saw no reason why they should not use rubber rollers in every case—provided they had the correct roller. In response to a further question he said that rubber was adversely affected by light. He believed that some rubbers were worse in this respect than others. He also believed that rubber could be made resistant to light.

Vulcanizer for Rubber Transmission Belting

THE accompanying illustration shows the newly developed electric vulcanizer made by James C. Heintz and Company, Cleveland. This device is made up with electrically heated aluminum platens and all double platen vulcanizers are equipped with cooling coils which permit quick cooling of the belt before removal of the vulcanizer.

In using this unique appliance, the average mechanic can successfully prepare belts for splicing and vulcanization by following a few simple instructions. The belt ends are first stepped down and skived in accordance with standard belt practice then cemented and placed together. A few minutes in the portable vulcanizer completes the task.

The heating elements are of Heintz manufacture and operate at a very low temperature. They are practically proof from burn-outs or trouble of any kind. Each platen is equipped with an automatic control device which turns the current on and off with variations in the temperature of only 1° F. between on and off position with total absence of chattering at the automatic switch contacts—the most accurate device of its kind ever constructed. The automatic control device is normally set to cut in at 286° F. and to



cut out at 287° F. An adjusting screw on the side of the control case permits adjustment to any temperature from 220° to 315° F.

Each platen is supported by a heavy cast steel frame with heavy clamping bolts on two sides to clamp the two halves of the vulcanizer together. This provides pressure of 100 pounds or more per square inch over the entire belt. Steel edge strips for reforming the edges on rubber covered belts are furnished with all double platen vulcanizers.

All double platen vulcanizers are equipped with cooling coils cast in the platens which permit quick cooling of the belt before removing from the vulcanizer. This feature is essential to prevent ply separation where there is moisture in the belt.

Rubber Tennis Courts*

THE rapid progress of lawn tennis throughout the world has led to a great deal of investigation into the preparation of playing surfaces of different kinds. For many years the standard surface in England was grass, but in America harder materials came into widespread use. The result is that today the grass court is rather the exception than the rule, and, in order to meet the enormous demand now existing, many different materials and types of construction have been evolved.

Experience has shown that one of the most satisfactory materials for British courts is Green Porubco, but also made in other colors, and is a composition with a porous rubber base. It was evolved by Arthur Kelway-Bamber, who conducted a long series of tests, both under practical conditions and in the laboratory, in order to find a substance that would give the necessary resilience and would be porous enough to permit surface water to drain away rapidly, and would be unaffected by heat, frost, or continued rain. Porubco courts, which are now being made by The Porubco Hard Courts Limited of Billington Road, Leighton Buzzard, Bedfordshire, England, have been laid down in many localities and have shown remarkable qualities. Some, for example, have been in consistent use for upwards of eight years, during the whole of which period they have received no attention whatsoever, yet they present today a playing surface superior to any other courts.

Of a grass green in color, the courts have inlaid permanent white lines: they require no upkeep whatsoever, and the porous nature of the material eliminates the need for drain pipes of any kind.

*Reprinted from *Industrial World*, London, December, 1932.

O'Neil Says 60,000,000 Tires Will Be Needed in 1933

By W. O'NEIL
President, General Tire and Rubber Company

PROSPECT of increases in the prices of crude materials in the near future is one of the most encouraging signs in the outlook for 1933 in the tire and rubber industry. Rubber and cotton, which are the basic materials in the manufacture of rubber tires, are now selling at considerably below he cost of production. There is little likelihood that they can go much lower and, before long, they must start on the upward trend.

Labor is not a big factor in the rubber industry. Neither is freight. The largest single factor in the cost of building a tire is the investment in raw materials. Rubber has declined in price from more than a dollar a pound in 1926 to three and one-quarter cents a pound at the end of 1932. Cotton also has gone down in cost.

This rapid decline in the cost of these raw materials has increased credit losses in the retail field, due to the fact that dealers have been losing on their stocks of merchandise which have been going down in value. At the same time, the dealer has been losing that necessary confidence in himself and his business, which he has to have, if he is to get the proper price for his goods.

Hardly any industry in the country will be bothered by commodity prices going lower in 1933. Since almost all raw materials are now selling below the lowest conceivable minimum cost of production, it is apparent that any change must be upward.

Realization of this fact, on the part of the buying public, must lead necessarily to added confidence in making purchases. Orders naturally are slowed up when the buyer feels that, perhaps a little later, merchandise will be selling at a lower price.

At the first indication of advances in the price of commodities, I feel confident that business will be stimulated. This stimulation in business will in its turn, still further raise the price of commodities.

When this upward trend starts, sales expenses will decline, credit losses will decline, freight percentage costs will decline. Losses to manufacturers on inventories will pass away. All of these favorable factors will more than overcome the unfavorable conditions that have come with the steady downward trend for the past few years.

Purchasing Power and Incomes

The fact is that the net income of a great many people is actually greater than it was in 1929, when one considers the purchasing power of their present-day income. This group, however, has been filled with fear that, if conditions continue to grow worse, their income, too, would be greatly decreased or cut off, and, because of that fear, they have not been doing their normal share of buying.

Bank confidence now has been restored and the first seasonal pick-up in employment will restore confidence in this large group of persons whose present income amply justifies additional expenditures at this time.

In the rubber industry, for example, there were produced in 1932 about 50,000 tons of crude rubber more than was consumed. This is less than eight per cent of the amount of rubber that was actually consumed and, certainly, business has been more than eight per cent belo wnormal. When business commences to pick up, the ratio of over-production to consumption will be reduced and then we will see rising prices.

More tire miles were worn off tires last year than were replaced. This is one of the most encouraging facts in the 1933 outlook in the tire industry.

Sixty million tires will be needed in 1933 on automobiles now on the highways, to provide the proper and essential safety and comfort to motor car owners. Of course, it is not certain that all of these 60,000,000 tires will be sold in 1933. In fact, statistical engineers who estimated several years ago that 90,000,000 tires were needed, are now asserting that the industry will produce and sell only 30,000,000 tires in 1933. We in the industry, know that 60,000,000 tires are actually needed.

With the return in buying confidence, to which we can reasonably look forward, and through constructive selling, the volume of tire sales in 1933 should come somewhere close to the goal of the number actually needed.

Increased Tire Sales Expected

As to other branches of the rubber industry, the boot and shoe business is enjoying quite a successful season this year but this is the first successful season in four. The tennis-shoe division of the industry has been interfered with by foreign competition.

The tire industry, as far as production in this country is concerned, is not greatly affected by the tariff situation because America produces so many more tires than Europe and tires that are so much better at a lower cost that European manufacturers would not be able to compete with us. This has not been true, however, of certain products in the boot and shoe industry.

The mechanical goods division of the rubber industry has been giving a fairly good account of itself with the exception of the tire-manufacturing units which found their capacity normally devoted to tire-making so idle that they sought additional volume in the mechanical rubber lines, often at prices that costs would not justify.

During the past five years, all of us in the rubber industry have done some things that were wrong. However, rising prices will wipe out the bad effects of many of these mistakes that the industry has made.

While some of us bought too much rubber and cotton, most of us have written all of these raw materials down to the present market. Those concerns which are in good shape financially, whose investments in fixed assets are not out of proportion to their sales possibilities, should look forward to a decidedly better business prospect in 1933.

Corporation Income Returns, 1931

IN a statement tabulating the Federal corporation income tax returns for 1931, filed up to August, 1932, the part played by the rubber manufacturing industry is covered by the following statistics, compiled from individual returns from corporations engaged in the domestic production of rubber goods:

Total Number of Returns	534
Returns Showing Net Income	172
Gross Income	$394,021,833
Net Income	$13,720,509
Net Loss for Prior Year	$2,390,773
Income Tax	$1,335,738
Returns Showing No Net Income	345
Gross Income	$283,581,849
Deficit	$25,752,279
Inactive Corporations	17

EDITORIAL COMMENT

An Optimistic Note

THE outlook for 1933 is encouraging, according to J. S. Tritle, vice-president and general manager of the Westinghouse Electric and Manufacturing Company. There are many indications that the worst is past and that we can now begin the long up-hill pull back to normal conditions. The financial panic is over. The publication of unfavorable earnings statements is no longer headline news and they pass with little or no comment in the daily papers. The hopeless frame of mind of the average man has given way to constructive thinking.

While there have been calamities of every sort during the last three years, it is a fact that this country is still going on about its business of living, consuming food, wearing out clothing, burning fuel, and using power—and doing the other things that our 120,000,000 people must do. The country has not stopped and this fact has been almost entirely ignored by many of our writers. It is even true that some people have money—actual money to spend for the things they want and they are spending it if we take trouble to dig out the facts. There are plenty of illustrations to prove that the desire of the people to have the things they want and to do the things they want to do is still very much alive.

In the electrical industry there are a number of hopeful indications. Consumption of electric power has gradually increased during the last few months. Domestic refrigeration is now accepted as a home essential and while the market is rather depressed just at the moment, there will be a large number of electric refrigerators sold in 1933. Commercial refrigeration is being more generally recognized and this opens up a big future market.

Air-conditioning of homes, buildings, stores and offices is making its first bid for acceptance. While much missionary work must be done before it is in general use, there will be a considerable volume of sales during the next few years.

The rubber industry is bound to respond to the first signs of recovery. Mr. O'Neil, president of General Tire and Rubber Company, has already predicted the sale of 60,000,000 tires for 1933.

The smaller industries which are nearly always the first to feel the effects of improved business are making moderate purchases of equipment and supplies.

"Buy America"

IN support of the general principle back of the "Buy America" movement, at this time, the following editorial from our contemporary, the *Akron Beacon Journal,* is worthy of reproduction.

"F. C. Millhoff of Falls Rubber, sounds a timely note in pointing out that the Akron district is one area that should be especially interested in success of the 'Buy American' movement currently making but slow headway. Foreign-made goods being 'dumped' upon us include duplicates of several varieties of Akron rubber products and other such duplicates, Millhoff notes, may be expected to follow unless the threat is met. As the rubber executive has well phrased it, 'Every dime that the workingman in the Akron district saves in the purchase of some cheap foreign-made article comes out of his own pockets. When he buys shoddy goods made by workingmen in other countries whose standard of living is lower than his and whose wages are but a mere fraction of his, he robs himself and his fellow workingman of wages and salaries that the manufacturers of these goods in Akron or elsewhere in the United States would have produced.'"

Cities Find Traffic Law Enforcement Pays

AN average reduction of 12 per cent in traffic accidents for the month of September, 1932, as compared with the same month a year ago resulted from the National Traffic Enforcement Demonstration in those cities where the experiment was completely carried through, it is announced.

Thirty cities participated in the demonstration but of these 14 were unable, for reasons beyond their control, to place particular stress on enforcement of the traffic law during the month. Of the remaining 16, only four failed to show reductions in accidents. These cities showed an average increase in total convictions for traffic law violations of 143 per cent and an average reduction in accidents of 12 per cent.

The figures indicated that a considerable increase in enforcement is required to bring about a relatively small decrease in accidents, but the relationship seems to be an important one nevertheless.

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THE RUBBER AGE is indexed in *Industrial Arts Index*

The Rubber Industry's CURRENT NEWS

Financial—Personals—New Rubber Products—
Building Operations—Manufacturing—Exports

FISK REFINANCING PLAN GRADUALLY WORKING OUT

Affairs of the Fisk Rubber Company, which have been dragging along during the past few months, seem in a way of resolving themselves in a satisfactory manner. The plan at present being promulgated calls for the segregation of the various physical units of the property and the eventual liquidation of all plants except the main establishment at Chicoppee Falls, Mass., and the fabric mill at New Bedford. When this has been accomplished, the financial structure will consist only of preferred stock liability, with no bond issue ahead of it, and it is felt that with manufacturing economies thus effected will put the company in a strong competitive position, relieving it of the burden it has been carrying for a long time. Merchandising policy will involve sales to the dealer, and while the volume will not be as large as in the past, results, it is felt, will be much improved.

The original plan, which was upset, but under which about $7,000,000 in securities were deposited, has been replaced by the present one, and nearly all of the previous depositories have assented to it, a letter having been sent out indicating that unless notices of withdrawal were received within twenty days, it would be assumed that assent was indicated. Only a nominal amount of securities has been withdrawn, and at the present time it looks as though the different factions were well on the way to an accord, having progressed so far that the necessary papers are being drawn up for submission to the court for approval.

Litchfield is Optimistic

Paul W. Litchfield, president of Goodyear Tire and Rubber Company, back in Akron after a month's swing through the West, recently issued a Christmas statement to Goodyear employes in which he prophesied an economic turn and expressed confidence in the re-establishment of normal economic conditions.

Noting that the number of employes to whom he addressed the statement is smaller than in other years, he said, "I may, therefore, talk a little more freely to you, as veterans with tightened belts, veterans of a hard-fought battle that is still under way.

"I wish I could tell you the day and the hour when the clouds of depression will lift. No man may tell that. There are many and complex forces involved. But signs are to be observed, over the horizon, that the turn is coming. We may be sure that things will surely come back, that abnormal things will become normal again, that peace and prosperity, and happiness will return."

Pilgrim Goes to Museum

The Goodyear blimp *Pilgrim*, first of the present Goodyear fleet, has been recently shipped to Washington by rail to be mounted in the Smithsonian Institution.

Glen Memmer and Thomas Ewing, Goodyear airship riggers, have the job of "stuffing" the blimp as a museum piece. The *Pilgrim* was decommissioned last spring after almost seven years of strenuous service.

Sponge Rubber Co. Party

The Sponge Rubber Products Company, Derby and Shelton, Conn., will celebrate its 10th anniversary in February, William R. Todd, secretary and treasurer, announced at the company's annual Christmas party for employees December 24.

The party, which was attended by 150 employees of both plants, was held in the Shelton factory building. Speakers in addition to Mr. Todd included Frederick M. Daly, president; Ralph A. Holbrook, chemist; Chester A. Garvin, office manager; John L. Rowe, New York representative, and J. Edward Bergeron and Kenneth Robins of the sales force.

A dinner and entertainment program, with Miss Georgiana H. Ennis as mistress of ceremonies, featured the affair.

N. J. Rubber Ass'n Elects

The Rubber Manufacturers' Association of New Jersey held its annual meeting recently at the Trenton Club, Trenton, N. J., and following a dinner, re-elected the following officers: president, John A. Lambert, Acme Rubber Company; vice-president, I. Ely Reed, Mercer Rubber Company; secretary, Charles E. Stokes, Jr., Home Rubber Company; treasurer, Horace B. Tobin, Woven Steel Hose and Rubber Company.

Seiberling Reports Loss

Seiberling Rubber Company reports for the year ended October 31, net loss of $32,343 after interest, depreciation, etc., against net in preceding fiscal year of $500,347 or $32.60 a share on 15,346 shares of 8 per cent preferred, on which there is an accumulation of unpaid dividends. Allowing for only annual dividend requirements on the preferred in preceding year the balance is equal to $1.39 a share on 271,106 no-par common shares.

MAIL ORDER PRICES SHOW NO CHANGES

Mail order houses have released their winter "flier" catalogs showing no important changes in tire prices.

Tire manufacturers had anticipated none, since the mail order houses were reported to be contemplating no alterations in tire schedules during the recent series of conferences of rubber company executives in New York.

The catalog prices were seen as confirming the declarations that peace has come definitely in the rubber industry's threatened discount war.

Prices of rubber goods generally are reduced slightly in the "flier" catalog, which is a between-season publication altering some prices pending the issuance of the regular spring catalog. Reductions in rubber goods were mainly in mechanical lines. They were estimated to average 4.7 per cent.

The differential between its mail order and its retail store prices on tires, which was established at the end of October is continued. On September 12 last, Sears raised the retail stores price of its tires by the amount of the excise tax. On October 31 mail order prices were also raised to levels averaging about 5 per cent lower than the new retail store prices. This differential whose establishment had been in contemplation for some time reflects the tire mounting and other service given purchasers through retail stores. The net effect so far as the mail order buyer is concerned is that the company absorbs part of the excise tax.

Goodrich Sales Conference

Annual sales conference of the sundries division of the B. F. Goodrich Company were held Monday and Tuesday, December 19 and 20. Representatives from all sections of the country took part.

J. J. Newman, assistant to president J. D. Tew, was one of the principal speakers at Monday's sessions. H. A. Bauman, director of sundries distribution was in charge of the conferences. Dr. William Lloyd Davis, head of the department of economics was the speaker at a banquet in the City Club, Monday evening. His subject was "A Salesman Looks at 1933."

Study of manufacturing operations and discussion of new processes was the main part of the program.

Salary Cut at Goodrich

B. F. Goodrich Company cut all salaries 10 per cent, effective January 1. This represents the third 10 per cent cut for Goodrich employes.

U. S. RUBBER INCREASES WORK HOURS 20 PER CENT

The United States Rubber Company's tire plant at Detroit will increase work hours 20 per cent during the current month, it was announced recently by J. F. O'Shaughnessy, vice-president in charge of sales.

"Resumption of comparatively large production schedules by the automobile industry, in connection with the introduction of new lines of passenger cars for 1933, has had a favorable effect on the number of work hours at our disposal," said Mr. O'Shaughnessy. "Indications now are that during January the number of hours will increase 20 per cent above the levels which have prevailed for some time.

"A normal payroll will benefit from the hour increase, because for several months it has been possible, through a controlled distribution of work hours, for the tire plant to maintain practically a constant number of workers. This system of operation has been followed because of a desire to give as much work as is available to the largest possible number of men."

Silver Fleet Embarks

The B. F. Goodrich Company's famous Silver Fleet began its annual winter trip to Florida at 6.45 Tuesday morning, December 27, with Ocala as its destination. The fleet will carry out tire testing operations throughout Florida during the winter and return to Akron in the Spring.

Twenty members of the Silver Fleet personnel are making the trip, in charge of H. B. Viers, supervisor. Others are:

George Mueller, Glen Towne, and T. B. Appleman, road foremen, and F. Schroeder, H. Williams, O. H. Walsh, H. Greene, H. Gable, William Meservie, B. Kelly, Carl Hummel, J. W. Obney, R. Lininger, A. B. Clayton, F. P. Richards, K. Whitmeyer, B. L. Anderson, R. O. Ferguson and P. M. Smith, drivers.

The fleet went through Lexington, Ky., Chattanooga, Tenn., Dalton, Ga., Atlanta, Ga., Macon, Ga., Valdosta, Ga., and Gainesville, Fla., before arriving at Ocala on December 30.

Footwear Factories Active

Snowy weather of the past few weeks has caused considerable improvement in operations at various Connecticut rubber footwear plants. The factories of the United States Rubber Company at Naugatuck are reported as working on a full schedule of three shifts, five days a week. Officials are quoted as holding an optimistic view of the remaining winter months, particularly if more snow falls.

Osborne Appoints Agents

White and Company, having offices in Cleveland and Akron, have been appointed agents for C. J. Osborn Company in those two cities and in the northern Ohio territory to call with their line of products for the paint, varnish, rubber and printing ink trades.

Wallace and Farnsworth, Detroit, Mich., have been appointed agents for the Osborn Company in the Michigan territory.

Names in the News

W. D. SHILTS, secretary of the Goodyear Tire and Rubber Company, and Mrs. Shilts, have returned from a 45,000 miles journey around the world cruise, which began last May. Mr. Shilts visited Goodyear factories abroad, studying sales and marketing conditions.

WALTER J. LEATHEROW, prominent for many years in the toy balloon industry, as head of the Howe-Bauman Balloon Company. Newark, N. J., is now a member of the Oak Rubber Company organization and the Howe-Bauman line of balloons is now automatically merged and becomes a part of the Oak line.

Mr. Leatherow made his entrance in the balloon business back in 1906. At that time

WALTER J. LEATHEROW

he organized the Rubber Balloon Company of America, and is said to have produced the first seamless rubber balloons to be made in this country. In 1911 he organized the Howe-Bauman Balloon Company. In his 27 years of activity in balloondom, Mr. Leatherow has become one of the best known men in the industry, particularly in the East and Middle West. In his new connection he will act as Oak's eastern representative.

FLETCHER WALLER, research psychologist, now experimenting at Harvard and Colgate universities, addressed the B. F. Goodrich Company mechanical division in business ethics, Wednesday, December 28. Mr. Waller talked on "Noise, Fatigue and Production." J. B. HANAN, staff superintendent of mechanical goods, was in charge of the meeting.

W. A. HAZLETT, Goodyear Tire and Rubber Company; C. J. JAHANT, vice-president and superintendent of the General Tire and Rubber Company; S. B. ROBERTSON, of B. F. Goodrich Company; B. M. ROBINSON, of Firestone Tire and Rubber Company and T. B. TIMKINSON, of Goodrich, were among those elected as directors for the ensuing year at the recent meeting of the Portage Country Club, Akron, O.

JOHN W. THOMAS, president of Firestone Tire and Rubber Company, has accepted the invitation to head a committee to plan the Founders' Day celebration of Akron University, January 18.

T. G. GRAHAM, B. F. Goodrich Company, vice-president, addressed the monthly dinner of the processing division supervisory personnel in the Goodrich cafeteria on Tuesday afternoon. December 27. JOHN NOONAN, processing division superintendent, was chairman.

K. D. SMITH, technical superintendent of the B. F. Goodrich Company tire division, will address the Pittsburgh section of the Society of Automotive Engineers, January 12, at the William Penn Hotel. Mr. Smith will discuss the introduction and use of low pressure tires in the automotive field.

ALLEN MERRILL, technical superintendent of the mechanical goods division of the B. F. Goodrich Company, was the speaker at a meeting of the engineering staffs of the Goodrich and Miller plants, Tuesday afternoon, Decembr 20.

JAMES A. WHEATLEY, sales manager of the automotive division of the Thermoid Rubber Company, Trenton, N. J., has been elected a director of the National Standard Parts Association during the recent convention held at Detroit, Mich. F. ROBERT LEE, vice-president and general sales manager of the Thermoid concern, has been elected president of the National Brake Lining Association.

C. F. CONNER, merchandising manager of the Mechanical Division, the B. F. Goodrich Company, attended the annual conference of the American Marketing Society in Dayton, December 27 and 28. He is a director of the organization. Paul T. Cherrington, nationally known sales authority, is president.

NELSON E. CHANCE, formerly district manager of the Houston office of the Brown Instrument Company, has been appointed assistant sales manager, with headquarters at Philadelphia. Mr. Chance has been with the company over ten years and for seven years was manager of the district comprising Texas, Louisiana and Southern Arkansas.

W. A. M. VAUGHAN has resigned as vice-president of the First-Central Trust Company, Cleveland, O., to return to the Seiberling Rubber Company as executive vice-president. Mr. Vaughan helped organize the Seiberling company in 1921 and was treasurer of that organization until 1925, when he was made vice-president of the First Trust Company, now a part of the First-Central Trust Company.

GIVE A JOB.

Rubber News Around the World

DECLINE IN DUTCH OUTPUT SEEN IN 1933

The concerted efforts recently made to revive rubber restriction would appear to be hanging fire. Sir Cecil Glementi, High Commissioner for Malaya, at a recent meeting of the Malayan Legislative Council, attributed the breakdown of the Anglo-Dutch negotiations in London to the apparently insoluble problem of native production. He further declared his opinion that the only real solution of the rubber situation was an increase in the use of rubber and the restoration of world trading conditions. It is generally expected that the first quarter of 1933 will show a further decline in shipments, especially from the Dutch East Indies, which are still producing on a gold basis.

According to figures just issued by the Malayan Information Agency, London, gross shipments from Malaya during November totalled 40,098 tons, as against 48.012 tons a year previously. Total gross shipments for the first 11 months of 1932 amount to 438,144 tons, against 483,999 tons for the same period last year. It will thus be seen that, while the statistical position is gradually improving, consumption still lags. Russia has been a buyer of rubber for some time past and a further expansion of Russian demand is not unlikely.

Rubber Industry Bill

Parliament again has before it at the present time, the revised Rubber Industry Bill, which has been proposed at previous sessions of the House for several years. To meet criticisms, one or two alterations have been made in the bill since it was last brought before Parliament.

The object of the bill is to ensure the continuance and development of scientific and industrial research into the problems arising in the manufacture of rubber and to place the Research Association of British Rubber Manufacturers upon a sound financial basis. It provides accordingly for the payment of a contribution by all rubber manufacturers in the United Kingdom of a sum not exceeding one-twenty-fifth of a penny per pound in respect of all rubber used in their processes of manufacture either as such or in the form of latex. The operation of the bill is limited to five years and the contributions to an average sum of £15,000 a year. On the basis of the present consumption of 75,00 tons a year it is estimated that the contribution under the bill would represent one-forty-fifth of a penny per pound.

Estate Production Economies

The annual report of the Department of Agriculture, Federated Malay States and Straits Settlements, points out that increasing attention has been paid to improvements in rubber factory machinery and equipment, particularly in the preparation of smoked sheet. As a result of the work of a number of estates, batteries of light sheeting machines in cascade or file formation have been developed and are in use, capable of outputs of from 2,000 lbs. to 3,000 lbs. of dry rubber per hour, or even more. The resultant saving in capital costs and running expenses on large estates will be very considerable, since a small factory with a battery of five or six light sheeting machines is sufficient alone for an area of 6,000 acres or more. Improvements in the ventilation and design of smoke-houses and smoke-house fire-boxes are also resulting in economies in consumption of wood fuel combined with more rapid drying and smoking.

Bata British Factory

Work on the big Bata shoe factory at East Tilbury, England, it is anticipated, will begin early in 1933. W. E. Walsham, local builder in Tilbury, has agreed on the final plans after a discussion with John Bata at Zlin, Czechoslovakia.

The Rev. W. C. Brown, vicar of Tilbury and rural dean, is visiting Zlin early in the new year in response to an invitation from the officilas of the Bata factory, to inspect conditions under which the boys who went from the Tilbury district are being trained for the new factory.

BRITISH GOODRICH EARNINGS SHOW GAIN

Before charging income-tax the net profit of the British Goodrich Rubber Company for the year ended September 30, 1932, amounted to £87,743—an increase from £73,333 for 1930-31. A provision of £24,013 is made for income-tax, whereas a year ago, after providing for tax to date, a credit of £11,905 arose owing to previous over-reservation.

After meeting the preference dividend and placing £20,000 to general reserve, a dividend of 5 per cent, the usual, has been proposed on the ordinary shares, and the balance forward is increased from £17,644 to £20,217. A year ago £25,000 was also allocated to contingencies reserve. Cash, debtors, stocks, and general investments amount to £571,404. Creditors and ordinary dividend total £153,868.

D. E. I. Rubber Declines

The Dutch East Indies shipment figures for November showed a continuation of the downtrend in native production, totaling 20,104 tons, against 20,338 tons during October, and 23,883 tons in November last year. Smaller shipments from East Coast, Sumatra and Borneo accounted for the decline, while Java, Madoera and the rest of Sumatra shipped larger amounts last month. Java and Madoera exported 4,438 tons against 4,087 in October, and 7,469 last year.

MARKET FOR TOY BALLOONS IN ITALY

There is a fairly large market for toy balloons in Italy, according to a report of the Canadian Trade Commissioner in Milan. Domestic production is estimated at 80 per cent of requirements, the remainder being supplied by importations from Belgium, Germany, and the United States. Apparently imports from Belgium are heaviest, the Belgian product being reported of better quality than the local and lower in price than German and American balloons. The demand is for the ordinary standard types and colors, with an apparent preference for the uni-colored product, the market requirements for which are chiefly supplied by domestic manufacture.

Toy balloons are produced in Italy by a number of small concerns. The material used is rubber sheeting, called "English sheets," of fine quality and generally one-fifth of a millimetre in thickness, supplied by the Italian rubber factory of Pirelli.

Foreign toy balloons are imported just before the opening of the selling season, which extends from November to March, so that orders should be solicited towards the end of the summer months.

Toy balloons are classified under the Italian tariff as manufactures of rubber. The duty on cut-sheet manufactures is 660 lire ($34.84) per 100 kilos (220 pounds) or 15 cents per pound. On other manufactures of rubber the rate is 429 lire ($22.65) per 100 kilos, or 10 cents per pound. In each case there is an additional duty of 15 per cent ad valorem.

Benjamin George Bishop

"Bishop of Silvertown" has decided to retire. Behind this bare statement lies the fact that Benjamin George Bishop, one of the best-known figures in the British rubber industry, has arrived at the end of a romantic career.

Mr. Bishop, works manager of the Silvertown Company, has been at the factory for 47 years. He was actually born at this historic rubber works, his father having been with the same concern for 53 years, long before John Silver, the founder of Silvertown, left Cornhill, London. In Silvertown they say of Mr. Bishop that it was he who made the world golfiing mad by ousting the old gutty ball and making a better one, he who kept the troops in cigarettes during the war, he who made the landing wheels for fighting airplanes built in Britain, he who fished up the German cables from the bottom of the sea, cut them and joined them up to Alied cables, and he who had a full view of the disastrous Silvertown explosion.

Although many other people had a share in these things, behind them all was Bishop of Silvertown. Ever since the late John Silver started his factory on the Thamesside marshes, in the fifties, and built up Silvertown around the works, there has been a Bishop in the middle of things.

GOODRICH EMPLOYES DISTRIBUTE XMAS CHEER

Employes of the B. F. Goodrich Company tire division, Akron, Ohio, filled Christmas baskets for 40 families and gave about $150 in cash to the City mission, it was announced by E. H. Barder, general superintendent.

Twenty-five turkeys were auctioned and the profits realized were given to the Mission. Money for the 40 baskets came from a relief fund contributed by tire division employees, factory workers on hourly wgae rates voluntarily giving 5 cents a week for eight weeks and office workers 10 cents a week.

In addition to Christmas efforts, assistance is given to former tire division employes and their families from this fund throughout the year. Harry Cash is chairman of the committee handling the work, and is assisted by Earl Gulick and Fred Comey.

Office workers of the Goodrich mechanical goods division, through their Good Fellows club, gave six well filled Christmas baskets. Organized three years ago, this group also has helped several families throughout the year. Miss Blanche Lewis is chairman of the committee and is aided by Charlotte Brewster and Clara Belle McCroskey.

New Cord Fabric

Introduction of a newly discovered cord fabric into bus and truck tires is announced by Gutta Percha & Rubber, Ltd. Technical details of the new material are not revealed. Laboratory and actual tests have been completed, says a statement from C. N. Larsen, general sales manager, which definitely establish the fact that tire life is considerably prolonged as a result.

"In a ten-ply tire," says a company statement based on laboratory reports, "the strength of the cords is increased over 500 pounds to the square inch. The discovery entails no additional cost to tire users."

Goodyear Textile Mills Div.

Goodyear Textile Mills Company has declared the regular quarterly dividend of $1.75 on the preferred stock, payable January 3 to stock of record December 20.

Rubber Stock Quotations 1932

	Last Price Dec. 31	Dec. 19	—1932— High	Low
Aetna	1½	1½	3	1½
American Hard Rubber	—	—	—	—
Faultless	18	—	25	18
Firestone	14½	14¾	18½	10¾
do. 6% pfd.	60	63½	68	45½
Fisk	—	¼	¾	¼
do. 1st pfd.	—	¼	2⅝	¼
General	27	25	49¾	18
do. pfd.	30	30	60	30
Goodrich	4	4½	12⅝	2¼
do. pfd.	12	12¼	23⅝	7
Goodyear	14¾	16	29¾	5½
do. 1st pfd.	51¾	39¾	69½	19¾
India	2¾	3½	8	½
Kelly-Springfield	1	1	2⅞	½
8% certfs. pfd.	—	—	24	7
Lee	5	4⅞	7⅞	2
Mohawk	1⅞	2	4	1
do. pfd.	20	20	20	20
Norwalk	1⅝	—	2½	⅝
Pirelli	31¼	—	31⅜	21
Raybestos-Manhattan	7½	6¼	12⅜	4⅞
Seiberling	2	2	5	1
do. pfd.	14⅜	14⅜	22	5
Thermoid	1¼	1¼	4	⅞
U. S. Rubber	4½	4⅛	10¼	1¼
do. pfd.	8½	—	20¾	3¾

New Rubber Goods

Diamond Star Eraser

Eberhard Faber Pencil Company, Brooklyn, N. Y., has just put on the market a new soft pink pencil eraser of their best quality in a novel shape. It is in the form of a diamond and is being offered in both a 5c and a 10c size, under the trade name of Diamond Star which is taken from the well-known Eberhard Faber trade mark.

The sharp corners of this eraser are particularly handy for fine erasures and the shape fits comfortably between finger and thumb. Another novel feature is the boxing of this eraser which is also diamond-shaped, the small size being packed three dozen and the large size one dozen in a box.

Rubber Quoits

A new portable indoor quoit game set is being offered the toy and sporting goods trade by the Shu-Quoi Game Corp., 1199 Broadway, New York City, N. Y. Using rubber quoits weighing ½ pound each the "Shu-Quoi" game set comprises: 2 inlaid rubber targets in three colors, 2 green quoits, 2 red quoits, 2 aluminum disks, 2 aluminum pins and 100 score cards.

New Goodrich Product

B. F. Goodrich Company has begun the manufacture of rubber weather stripping for use around metal door and window sash.

The new product is a thin, porous rubber strip, manufactured in various widths. It is coated to resist acid, smoke and industrial gases, and is designed to protect against wind, rain, dirt, dust and snow. It is the invention of J. R. Gloyd, Cleveland industril engineer, and is shortly to be marketed.

"Vanitex" Utility Aprons

This product of Van Cleef Bros., Chicago, Ill., is in answer to the desire voiced by many jobbers for a quality apron for the use of car washers, battery men and others. It is water-proof and acid-proof. Although a heavy duty apron, it only weighs 2 lbs. and 6 ozs. as the rubberizing is done with

pure rubber and not loaded with chemicals to give it body and thus add unnecessary weight. The apron is made from a closely woven, smooth cotton drill of great strength and is double coated. The finish of the rubber is smooth. A lighter weight and sized apron is also made, especially for factory workers, chemists, florists and others who need protection from liquids, acids, etc. It weighs only 12¾ ozs.

"Spunjy-Lastik" Toys

"Spunjy-Lastik," a new creative cut-up game, is the latest and most unique product of the Sponge Rubber Products Company, Derby, Conn., who are marketing it through exclusive selling agency arrangements with the Spunjy-Lastik Sales Company, New York City. Spunjy-Lastik, which is a sponge rubber fabric, comes in sheets 22" x 28", in vraying thicknesses from ¼" to 1" and is supplied in several colors. The idea is to cut up the sheets to form toy animals, dolls, etc. Cement for the purpose of putting the pieces together is supplied with the set, as well as full directions and helpful diagrams. The sponge rubber fabric is easily cut with scissors and the effects which can be created are unlimited.

Spunjy-Lastik Package

LATE MARKET PRICES

RUBBER—COTTONS AND FABRICS—CHEMICALS

NEW YORK, JANUARY 4, 1933

Crude Rubber

PRICE levels on crude rubber have remained constant during the last fortnight, with hardly the fluctuation of a fraction of a cent. The poor statistical position of the raw commodity makes any advance in the market so improbable, at least for some months, that there is no particular speculative interest which would stimulate prices. At present prices there is little incentive to stock raw materials and tie up inventories.

The continued low production schedules in the automobile industry is another discouraging factor. December consumption of crude rubber will probably register more than a seasonable decline and show another low record. Reports from Akron would indicate that factories are operating at the lowest in the last few months, but there is a touch of optimism in the remarks of the leading rubber executives, to the effect that the turn of the new year is expected to show a decided improvement, which will particularly materialize in the early Spring.

Prices on the outside New York market, as of January 4, for the more popular standard grades of crude rubber were as follows:

Plantations—			
Ribbed Smoked Sheets—			
Spot	—	@	.03 3/16
Jan.-Mar.	—	@	.03 3/16
Apr.-June	—	@	.04⅝
First Latex, crepe spot	—	@	.04
Amber Crepe, No. 2	—	@	.02 15/16
Amber Crepe, No. 3	—	@	.02¾
Amber Crepe, No. 4	—	@	.02⅝
Brown Crepe, Clean thin	—	@	.02¾
Brown Crepe, rolled	—	@	.02½
Latex—			
Liquid Latex, per gal.	.70	@	.75
Paras—			
Up-river, fine	.06½	@	.06¾
Up-river, coarse	Nominal		
Acre, Bolivian, fine	.07⅛	@	.07⅝
Caucho Ball, Upper	—	@	.03
Centrals—			
Central scrap	.04	@	—
Esmeraldas	.04	@	—
Balata—			
Block, Ciudad	—	@	.18

LONDON MARKET

Standard Ribbed Smoked Sheets—Buyers			
Jan.	—	@	2 15/32d
Mar.	2 7/16	@	2 13/32d

SINGAPORE MARKET

Standard Ribbed Smoked Sheets—Sellers			
Spot	——	@	2 1/16d

Reclaimed Rubber

There has been no change from the last recorded prices on the standard grades of reclaimed rubber. The prevailing prices are already at the producible minimum, according to manufacturers' costs. On the other hand, it is a source of encouragement to reclaimers to note the fact that reclaimed rubber is holding its own as an established compounding material, in spite of its higher price in relation to crude. Late prices for the standard grades follow:

High Tensile				
High Tensile Red	lb.	.04¾	@	.05
Super-Reclaim Black	lb.	.05	@	.05¼
Shoe				
Washed	lb.	.05⅛	@	.05⅜
Tube				
No. 1 (Floating)	lb.	—	@	.06½
No. 2 (Compounded)	lb.	.04½	@	.04⅝
Tires				
Black	lb.	.03¾	@	.04
Black, selected tires	lb.	.04	@	.04⅛
Dark Gray		.05	@	.05¼
Light Gray	lb.	.05⅛	@	.06
White	lb.	.05½	@	.05⅝
Truck, Heavy Gravity	lb.	.05	@	.05¼
Truck, Light Gravity	lb.	.05¼	@	.05½
Miscellaneous				
Mechanical blends	lb.	.03	@	.03½

Scrap Rubber

Little change can be noted in the scrap rubber field at the present low prices for ordinary grades. Accumulations seem to be slightly better and junkmen are finding it easier to collect stocks at favorable prices. With the reclaimed market holding up there has been a continued steady demand for scrap but orders have been limited and trading has been a matter of bargaining. Late quotations on the leading grades of scrap follow:

(Prices to Consumer)

Auto tire peelings	ton	16.00	@	18.00
Mixed auto	ton	6.50	@	7.50
Clean solid truck tires	ton	24.00	@	27.50
Boots and shoes	ton	15.00	@	17.50
Arctics, untrimmed	ton	10.00	@	12.50
Inner tubes, No. 1	lb.	.02	@	.02¼
Inner tubes, No. 2, compounded	lb.	.01¼	@	.01⅝
Inner Tubes, Red	lb.	.01⅝	@	.01½

Cotton

IN spite of the latest Government report showing an increase in cotton production, prices have slightly advanced within the last few days. Mills are reported active and are taking supplies in fair quantities. It was reported in November that the sales of cotton cloth were 82.3 per cent of production. Supplies of raw cotton have not exceeded last year's figure, showing that consumption was holding its own. Late reports list the world stocks of cotton at 40,505,000 bales, as against 40,481,000 bales in 1931.

High, low and closing prices on the New York Cotton Exchange, as of January 4, were as follows:

	Jan. 4 High	Jan. 4 Low	Jan. 4 Close	Dec. 20 Close
Jan.	6.10	5.95	6.12	5.92
Mar.	6.23	6.00	6.21	6.06
May	6.35	6.24	6.35	——

Tire Fabrics

With the curtailment in tire production schedules, inaugurated by the leading manufacturers and other rubber goods producers, during the seasonal Christmas period, trading in tire fabrics has been extremely dull and no changes in price levels can be recorded. Late prices follow:

(Prices Net at the Mill)

CORD				
Peeler, carded, 23/4/3	lb.	.22	@	.22½
Peeler, carded, 23/5/3	lb.	.21	@	.21¼
Peeler, carded, 13/3/3	lb.	.18	@	.18¼
Peeler, carded, 15/3/3	lb.	.19	@	.19¼
Egyptian, carded, 23/5/3	lb.	.34½	@	.35
Egyptian, combed, 23/5/3	lb.	.39½	@	.40
CHAFERS				
Carded, American, 8 oz.	lb.	.18	@	.18½
Carded, American, 10 oz.	lb.	.18	@	.18½
Carded, American, 12 oz.	lb.	.18	@	.18½
Carded, American, 14 oz.	lb.	.17½	@	.18
LENO BREAKER				
Carded, American, 8¼ oz.	lb.	.18	@	.21
Carded, American, 10¼ oz.	lb.	.18	@	.21
SQUARE WOVEN				
Carded, American, 17¼ oz. 28-11 ply	lb.	.21	@	.21¼
Carded, American, 17¼ oz. 10-5 ply	lb.	.17	@	.17½

Sheetings

A slight decline on sheeting prices, in reflection of the drop in raw cotton, has been reported during the past fortnight, but in spite of the attractive price levels, the market has been reported as dull, with only hand-to-mouth buying interest. Late prices follow:

40 inch, 2.50 yard	yd.	—	@	.05¼
40 inch, 2.85 yard	yd.	.04⅝	@	.04½
40 inch, 3.15 yard	yd.	—	@	.04⅝
40 inch, 3.60 yard	yd.	.04¼	@	.04⅜
40 inch, 3.75 yard	yd.	.03⅝	@	.03½
40 inch, 4.25 yard	yd.	.03¼	@	.03⅜

Ducks

There has been no change in the price levels for the standard grades of ducks used in the rubber industry. Latest quotations follow:

Enameling	lb.	.18	@	.22
Belting and Hose	lb.	.19	@	.20
Single filling	lb.	.07½	@	.07¾
Double filling	lb.	.09½	@	.10

Closing Prices on Rubber Exchange of New York, Inc.

No 1 Standard Contract of 10 Tons*

FROM DECEMBER 21, 1932, TO JANUARY 4, 1933

Date		Spot	Dec.	Jan.	Feb.	Mar.	Apr.	Sales
Dec.	21	3.20	3.16	3.25	3.29	3.34	3.36	28
	22	3.19	3.10	3.18	3.23	3.28	3.31	40
	23	3.17	3.10	3.18	3.22	3.26	3.29	48
	27	3.17	3.10	3.18	3.21	3.25	3.29	34
	28	3.17	3.10	3.18	3.21	3.25	3.29	51
	29	3.19	——	3.18	3.21	3.25	3.29	32
	30	3.21	——	3.18	3.21	3.25	3.29	27
Jan.	3	3.15	——	3.15	3.19	3.23	3.26	21
	4	3.15	——	3.13	3.18	3.24	3.28	17

*This contract will be superseded by "No. 1 B Standard" on April 1, 1933

CHEMICALS

THE decline in production schedules which marked the tire industry and other rubber goods manufacturing lines during the last month has necessarily had a reaction on the chemical supply market and business has been extremely dull. Buying interest has been practically nil, with only hand-to-mouth orders being placed. With prices at present low levels, there appears to be very little incentive to stock chemical supplies. No price changes have been recorded during the fortnight.

ACCELERATORS

Organic				
A-1	lb.	.24	@	.27
A-5-10	lb.	.33	@	.36
A-7	lb.	.55	@	.59
A-11	lb.	.62	@	.66
A-16	lb.	.57	@	.61
A-19	lb.	.58	@	.62
A-20	lb.	.64	@	.68
A-32	lb.	.80	@	.95
Aldehyde ammonia, crystals	lb.	.65	@	.67
Altax	lb.			
Captax	lb.			
Crylene	lb.	.55	@	.65
paste	lb.	.45	@	.55
Di-Ortho-Tolyguanidine	lb.	.42	@	.43
Diphenylguanidine	lb.	.33	@	.34
Ethylidene aniline	lb.	.45	@	.47½
Formaldehyde aniline	lb.	.37½	@	.42
Heptene	lb.	.40	@	—
Hexamethylene-tetramine	lb.	.46	@	.47
Lithex	lb.	.18	@	.20
Methylenedianiline	lb.	.37½	@	.40
Monex	lb.	3.25	@	—
Oxynone	lb.	.68	@	.80
Phenex	lb.	.50	@	.55
R & H 40	lb.	.40	@	.41
R & H 50	lb.	.40	@	.41
R-2	lb.	1.95	@	2.15
Safex	lb.	1.20	@	1.25
SPDX	lb.	.75	@	—
Super-Sulphur No. 1	lb.			
No. 2	lb.			
Thiocarbanilid, drums	lb.	.25	@	.27
Trimene	lb.	.75	@	—
base	lb.	1.20	@	—
Triphenylguanidine	lb.	.58	@	.60
Tuads	lb.			
Ureka	lb.	.75	@	1.00
Vulcanex	lb.			
Vulcone	lb.			
Vulcanol	lb.			
Z-88-P	lb.	.50	@	.60
Zimate	lb.			
Inorganic				
Litharge, domestic	lb.	.05¾	@	—
Magnesia, calcined, light	per 100 lb.	5.35	@	5.45
heavy	per 100 lb.	3.65	@	3.75

COLORS

Blacks (See Compounding Materials)

Blues				
Prussian	lb.	.36	@	.37
Ultramarine	lb.	.06	@	.30
Browns				
Sienna, Italian	lb.	.04	@	.08
Umber, Turkey	lb.	.04	@	.06
Greens				
Chrome, light	lb.	.23	@	.26
medium	lb.	.26	@	.28
dark	lb.	.28	@	.33
Chromium Oxide, bbl.	lb.	.23	@	.27
Reds				
Antimony crimson, 15/7	lb.	.40	@	—
sulfur, free	lb.	.52	@	.56
Indian English	lb.	.09	@	.10
Domestic (Maroon)	lb.	.11	@	—
Red oxide, pure	lb.	.10	@	.12
Rub-Er-Red, f.o.b. Easton	lb.	.03½	@	—
Whites				
Lithopone, Albalith	lb.	.04½	@	.04¾
Lithopone, Azolith	lb.	.04½	@	.04¾
Titanium oxide	lb.	.17	@	.19
Titanox B	lb.	.06	@	.06½
Titanox C	lb.	.06	@	.06½
Zinc Oxide—American Process				
American Azo: ZZZ (lead free)	lb.	.05¾	@	.06
ZZ (leaded)	lb.	.05½	@	.05¾
Horsehead Lead Free Brand:				
Selected	lb.	.05¾	@	.06
Special	lb.	.05¾	@	.06
XX Red	lb.	.05¾	@	.06
XX	lb.	.05¾	@	.06
XX Green	lb.	.05¾	@	.06
Leaded Brand, Standard	lb.	.05½	@	.05¾
Sterling	lb.	.05½	@	.05¾
Superior	lb.	.05½	@	.05¾
Lehigh	lb.	.05¼	@	.05½
U. S. P., bbls.	lb.	—	@	.12¾
Kadox, black label	lb.	.09⅝	@	.09⅞
Blue label	lb.	.08⅝	@	.08⅞
Red label	lb.	.07¼	@	.07½
Cryptone, No. 19	lb.	.06½	@	.06¾
Cryptone CB, No. 21	lb.	.06½	@	.06¾
XX Zinc Sulphide, bbls.	lb.	—	@	.13
St. Joe, black label	lb.	.05¾	@	.06
green label	lb.	.05¾	@	.06
red label	lb.	.05¾	@	.06
Zinc Oxide—French Process				
Anaconda, lead free	lb.	.05¾	@	.06
Anaconda, selected lead free	lb.	.06¼	@	.06½
Florence White seal, bbls.	lb.	—	@	.10⅞
Green seal	lb.	.09⅝	@	.09⅞
Red seal	lb.	.08⅝	@	.08⅞
Yellows				
Chrome	lb.	.16	@	.16½
Ocher, dom. med.	lb.	.01½	@	.02

BLACKS

Arrow "Aerfloted" c.l. f.o.b. works, bags	lb.	.02¾	@	—
c.l. f.o.b. works, cases	lb.	.04¼	@	—
less c.l. f.o.b. works	lb.	.05¼	@	.07
Arrow "Aerfloted" Specification, c.l. f.o.b. wks., bags	lb.	.03	@	—
Bone, powdered	lb.	.05½	@	.12½
Carbon, compressed	lb.	.02¾	@	.07
uncompressed	lb.	.02¾	@	.07
"Certified," Cabot c.l. f.o.b. works, bags	lb.	.02¾	@	—
c.l. f.o.b. works, cases	lb.	.04¼	@	—
less c.l. f.o.b. works	lb.	.05¼	@	.07
"Disperso" f.o.b. La.	lb.	.028	@	.071
f.o.b. Texas	lb.	.02¾	@	.07
Drop, bbls.	lb.	.05½	@	.14
"Excello," compressed	lb.	.03	@	—
"Fumonex"	lb.	.02½	@	.06
"Gastex"	lb.	.02½	@	.06
Lampblack	lb.	.06	@	.08
"Micronex" c.l. f.o.b. works, bags	lb.	.03	@	—
c.l. f.o.b. works, cases	lb.	.04½	@	—
less c.l. f.o.b. works	lb.	.05½	@	.07
"Supreme"	lb.	.02¾	@	—
Thermatomic—"P 33"	lb.	—		—
"Thermax"	lb.	—		—
United, "Dixie" and "Kosmos" c.l. f.o.b. works, bags	lb.	.02¾	@	—
c.l. f.o.b. works, cases	lb.	.04¼	@	—
less c.l. f.o.b. works	lb.	.05¼	@	.07
"Velvetex"	lb.	.02	@	.05

COMPOUNDING MATERIALS

Aluminum Flake	ton	21.85	@	24.50
Ammonia carbonate, lump	lb.	.10½	@	.12
Asbestine	ton	13.40	@	14.00
Barium carbonate (98-100%)	lb.	.05	@	—
Barium Dust	lb.	.05	@	.06
Barytes southern off-color	ton	12.00	@	18.00
Western prime white	ton	33.00	@	—
Basofor	lb.	.04½	@	—
Bentonite	lb.	.02	@	.03
Blanc fixe dry f.o.b. works	ton	60.00	@	75.00
Carrara filler	lb.	.01¾	@	.02
Catalpo (fact.)	lb.	.02	@	—
Chalk, precipitated Suprex white, extra lt.	ton	60.00	@	70.00
heavy	ton	45.00	@	55.00
Clay, Kaolin, domestic	ton	6.00	@	7.00
Aerfloted, Suprex	ton	6.50	@	8.00
Congaree	ton	9.00	@	—
Dark Blue Ridge	ton			
Dixie	ton			
Langford	ton			
Lexington	ton	18.00	@	22.00
Par	ton			
Tensulite		15.00	@	—
Cotton Flock	lb.	.08	@	.16
Glues, extra white	lb.	.15	@	.22
medium white	lb.	.12	@	.14
Kalite No. 1	ton	30.00	@	55.00
Kalite No. 3	ton	40.00	@	65.00
Magnesia, carbonate	lb.	.05¾	@	.06
Mica	lb.	.04	@	—
Rottonstone (powdered)	ton	23.50	@	28.00
Soapstone, powdered	ton	16.00	@	18.00
Starch, powdered	cwt.	2.34	@	—
Talc, domestic	ton	12.00	@	15.00
Pyrax A	ton			
Whiting, commercial	cwt.	.85	@	1.10
English cliffstone	cwt.	1.50	@	1.70
Sussex	ton			
Witco	ton	20.00	@	—
Zinc Carbonate	lb.	.10½	@	—
Zinc Stearate	lb.	.20½	@	—

MINERAL RUBBER

Genasco (factory	ton	40.00	@	42.00
Granulated M. R.	ton			
Hard Hydrocarbon	ton			
Parmr, solid	ton	23.00	@	28.00
Pioneer, MR, solid	ton	40.00	@	42.00
Pioneer-granulated	ton	50.00	@	52.00
R & H Hydro-Carbon	ton	27.05	@	29.00

SOFTENERS

Acids				
Nitric, 36 degrees	cwt.	5.00	@	5.25
Sulfuric, 66 degrees	cwt.	1.60	@	1.95
Tartaric, crystals	lb.	—	@	.26½
Acids, Fatty				
Laurex	lb.	.15	@	.16
Stearex	lb.	.08	@	.12
Stearic, double pressed	lb.	.08	@	.12
Alkalies				
Caustic soda, 76%	cwt.	2.50	@	2.90
Soda Ash, 58% C.L.	cwt.	1.15	@	1.17½
Oils				
Corn, refined, bbls.	lb.	.05½	@	.06
Cottonseed, crude		.03½	@	.04
Degras (c.l. 100 bbls.)	lb.	.02¾	@	—
Less c.l. (10-25 bbls.)	lb.	.03	@	—
Lots less than 10 bbls.	lb.	.03¼	@	—
Fluxrite	lb.	.05½	@	.06¼
Palm Lagos	lb.	.03¼	@	.03½
Niger	lb.	.02¾	@	.03
Para-Flux	gal.	.17	@	—
Petrolatum, white	lb.	.08	@	.08½
Pigmentaroil	gal.	.18	@	.33
Pine, steam distilled	gal.	.59	@	.61
destructively distilled	gal.	.58	@	.62
Witco Palm Oil	lb.	.07½	@	—
Witco Softener (f.o.b. wks.)	lb.	.02	@	—
Resins and Pitches				
Pitch, Burgundy	lb.	.05	@	.06
coal tar	gal.	.05½	@	.06
pine, 200 lb. gr. wt. bbl.		7.00	@	—
Rosin, grade K, 280 lb. bbl.		4.35	@	—
Pigmentar	gal.	.18	@	.33
Tar Retort, 50 gal.	bbl.	10.00	@	11.00
Solvents				
Acetone, pure	lb.	.10	@	.13
Alcohol, denatured, No. 1 bbls.	gal.	.37	@	.45
Benzol, 90%	gal.	.20	@	.21
Carbon, bisulfide	lb.	.05½	@	.06¼
Carbon, tetrachloride	lb.	.06¼	@	.07
Dryolene (f.o.b. Okla.)	gal.	.10	@	.10½
Gasoline, steel bbls.	gal.	.16	@	—
Naphtha, solvent	gal.	.26	@	.33
Rub-Sol (f.o.b. Okla.)	gal.	.09	@	—
Turpentine, spirits	gal.	.45¼	@	—
wood	gal.	—	@	.40
destructively distilled	gal.	.35	@	—
Waxes				
Beeswax, white	lb.	.30	@	.32
Carnauba	lb.	.25	@	.26
Ceresin, white	lb.	.10	@	.11
Montan, crude	lb.	.05	@	.06
Ozokerite, black	lb.	.24	@	.25
green	lb.	.26	@	.30
Paraffin (c.l.—f.o.b. N. Y.)				
Yellow crude scale	lb.	.02	@	—
White crude scale 124/126	lb.	.02	@	—
Refined, 125/127	lb.	.02¾	@	—
Refined, 128/130	lb.	.03¼	@	—
Refined, 135/137	lb.	.04	@	—
Refined, 138/140	lb.	.06¾	@	—

ANTI-OXIDANTS

AgeRite, Gel	lb.			
Powder	lb.			
Resin	lb.			
White	lb.			
Albasan	lb.	.70	@	.75
Antox	lb.			
B-L-E	lb.	.57	@	.60
Neozone	lb.			
Oxynone	lb.	.68	@	.80
Resistox	lb.	.54	@	.57
Retardex	lb.	.35	@	.40
Stabilite	lb.	.57	@	.62
Stabilite Alba	lb.	.70	@	.75
VGB	lb.	.55	@	.60

SPECIALTIES

Aromatics- Rodo	lb.			
Sunproof	lb.	.35	@	.37½
Sponge Paste	lb.	—	@	.30
Tonox	lb.	.56	@	.60

SUBSTITUTES

Black	lb.	.06	@	.08
White	lb.	.08	@	.12
Brown	lb.	.07	@	.11

VULCANIZING INGREDIENTS

Sulfur Chloride (drums)	lb.	.04	@	—
Sulfur flour, Ref'n'd, 100% pure (bags)	cwt.	2.40	@	2.75
Commercial (bags	cwt.	1.75	@	2.10
Telloy	lb.			
Vandex	lb.			

TIRES & TUBES
CRUDE RUBBER

STATISTICAL SECTION

AUTOMOBILES
GASOLINE

NO MATERIAL changes can be noted in the statistical situation as regards the rubber industry. The statistical position of the raw commodity remains extremely unfavorable to any price rise. Stocks are still at record high levels, with production continuing to exceed consumption. Just how long this situation can go on is a matter of conjecture. Domestic consumption of crude rubber improved only slightly in November and will show no sharp change in the December figure.

While there has been a gradual decrease in the stocks held in London and Liverpool, the quantity on hand and afloat to the United States has reached the peak of all times.

PLAN OF THE SECTION

The statistics included in this section have been chosen for their constant importance to the rubber industry. The tables are reprinted in the same relative position in every issue, each table being kept current by the addition of new figures as soon as they become available.

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The tire and tube production, inventory and shipment figures reflect the low state of the industry from the manufacturing viewpoint. The increase in inventories, coupled with the sharp decline in shipments, is particularly significant and discouraging.

Market prices both on the New York Exchange and in London and the domestic outside market have failed to fluctuate to any extent during the month of December, the total range between November and December being only a ¼ of a cent.

Latest figures covering imports and exports of crude rubber from the leading consuming and producing countries are reported in the appropriate tables in this section.

U. S. Imports and Exports of Crude Rubber

	Gross Imports			Re-exports			Net Imports
YEARS	Long Tons	Total Declared Value	Average Declared Value per pound Cents	Long Tons	Total Declared Value	Average Declared Value per pound Cents	Long Tons
1922	301,076	101,943,188	15.10	4,809	1,921,328	17.84	296,267
1923	309,144	135,060,304	26.72	8,772	5,672,319	28.87	300,372
1924	328,056	174,231,331	23.71	10,309	6,057,637	26.23	317,747
1925	396,642	429,705,914	48.36	14,827	19,847,753	59.76	381,815
1926	413,338	505,817,807	54.63	17,671	22,470,583	56.77	395,667
1927	426,258	339,874,774	35.60	27,775	24,735,488	39.76	398,483
1928	489,731	244,554,978	25.03	32,159	16,128,361	25.17	407,572
1929	560,084	289,178,783	19.15	36,485	16,868,733	20.64	523,599
1930	482,082	139,134,330	12.89	30,205	9,316,205	13.77	451,877
1931	497,138	72,918,949	6.54	25,595	4,255,572	7.42	471,543
1931:							
Jan.	36,307	7,190,591	8.84	1,706	350,480	9.17	34,601
Feb.	34,005	6,564,969	8.62	1,799	357,078	8.86	32,206
Mar.	40,393	7,356,505	8.13	2,800	534,180	8.52	37,593
Apr.	44,536	7,712,941	7.73	2,607	528,947	9.06	41,929
May	35,526	5,886,633	7.40	2,501	418,301	7.47	33,025
June	46,233	6,918,900	6.68	2,749	440,604	7.15	43,484
July	43,469	6,023,748	6.19	1,435	223,587	6.96	42,034
Aug.	38,669	5,138,404	5.93	2,324	345,953	6.65	36,345
Sept.	38,494	4,970,324	5.76	1,362	187,431	6.14	37,132
Oct.	41,131	4,803,582	5.21	1,527	203,574	5.95	39,604
Nov.	43,345	4,742,218	4.72	1,403	198,284	6.31	43,435
Dec.	53,536	5,610,129	4.68	2,462	326,382	5.91	51,070
1932:							
Jan.	33,221	3,387,505	4.55	1,524	185,466	5.43	31,697
Feb.	27,959	2,690,250	4.29	1,915	222,584	5.19	26,044
Mar.	45,197	4,251,301	4.19	2,227	240,128	4.84	42,970
April	37,903	3,131,343	3.74	2,128	196,934	4.53	35,775
May	34,182	2,798,914	3.71	1,505	144,561	4.30	32,677
June	40,808	2,647,085	2.89	1,981	134,336	3.02	39,136
July	32,306	2,102,915	2.91	2,030	179,699	3.95	30,276
August	33,449	2,027,045	2.71	1,339	128,952	4.29	32,110
Oct.	35,096	2,436,522	3.10	1,059	98,022	4.13	34,037
Nov.	28,908	2,263,469	3.48	1,745	158,618	40.6	27,163
Dec.							

U. S. Consumption of Crude Rubber

(Rubber Manufacturers' Association statistics raised to 100 per cent—All figures in long tons)

Figures on Monthly Basis

	1925	1926	1927	1928	1929	1930	1931	1932
Jan.	29,688	32,196	31,518	34,403	43,002	36,194	28,557	27,962
Feb.	29,761	31,136	30,137	33,702	41,594	33,302	28,797	30,011
Mar.	33,498	32,936	36,141	35,688	44,730	35,540	32,788	27,828
Apr.	34,139	32,696	35,871	32,772	47,521	39,686	33,321	25,953
May	35,322	29,364	34,592	37,333	49,233	39,386	37,317	29,197
June	35,822	28,598	33,801	37,676	43,227	34,195	37,916	39,116
July	36,053	27,577	29,219	37,407	41,526	29,508	31,937	28,272
Aug.	35,909	34,533	33,460	42,927	38,274	30,850	27,586	22,372
Sept.	31,691	32,904	27,214	39,882	34,707	25,515	23,638	22,491
Oct.	29,047	29,936	26,790	40,857	34,800	27,516	22,277	21,018
Nov.	28,253	28,080	26,792	37,461	27,659	23,691	22,943	21,910
Dec.	28,748	26,293	25,492	31,282	23,531	21,687	21,409	—
Totals	388,481	366,149	371,027	441,340	469,804	375,980	348,986	—

Figures on Quarterly Basis

Quarter	1925	1926	1927	1928	1929	1930	1931	1932
Jan./Mar.	95,263	94,301	99,216	103,558	128,565	101,610	89,652	85,809
Apr./June	104,099	87,109	103,242	103,500	139,292	112,229	107,755	92,643
July/Sept.	99,493	93,793	89,210	117,573	113,746	85,261	83,632	72,523
Oct./Dec.	85,789	83,212	80,860	117,597	84,872	72,020	65,645	—
Totals	384,644	358,415	372,528	442,227	466,475	371,120	346,684	—

Note—The Rubber Association estimates its monthly rubber consumption figues to be 80 per cent complete. Up until 1925 the quarterly figures were likewise estimated to be 90 per cent complete; beginning with 1925 an estimate of 92 per cent completeness has been used. These estimates have been used in raising the figures in this table to 100 per cent. The quarterly figures are generally regarded as the most authentic; the monthly figures may be accepted as preliminary.

U. S. Consumption of Gasoline

(In Thousands of Barrels of 42 Gallons)

	1930	1931	1932		1930	1931	1932
January	25,781	26,844	26,845	July	38,256	39,459	31,817
February	26,509	26,133	25,344	August	37,433	39,459	35,207
March	31,029	31,037	29,451	September	37,823	36,670	33,645
April	34,549	33,400	30,252	October	32,267	35,051	32,255
May	36,497	35,716	31,574	November	30,984	30,640	30,294
June	35,902	38,375	38,766	December	29,094	30,529	—

Daily Spot Closing Prices of Ribbed Smoked Sheet Rubber—*New York Market, in Cents per Pound*

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Ave.
1930																																
July	12¼	12¼	12	—	—	—	12	11⅞	11⅝	11⅝	11⅝	11¼	—	11⅜	11¼	11¼	11⅛	10⅝	—	10¼	10⅜	11⅛	10⅜	10⅜	10⅜	10⅜	10¾	10⅝	10⅜	10½	11¼
August	10⅜	10⅜		10⅜	10½	10½	10¼	10¼	10¼	10¼	10	9¾	9⅝	9⅝	9⅝	9⅝	9⅝	9⅝	9⅜	9¼	9½	9⅜	9⅜	9⅜	9⅜	9⅜	9¾	9⅝	9⅜	—	—	10
September	—	9⅜	9⅜	9¾	9	8½	—	8	8¼	8¼	8⅛	8¼	8⅛	8	8	8	8	8⅛	8	8	8	8⅛	8⅛	8⅛	8⅛	8⅛	8⅛	8⅛	7½	8⅜	8⅛	8¼
October	7½	7⅞		8	8	7⅝	8	8	8	7½	8	8	8	7⅞	8	8	7⅞	7⅞	8	8	8⅛	8⅛	8⅛	8⅛	8⅛	8⅛	8⅛	8⅛	8⅛	8⅛	8⅛	8⅛	8
November	8½	8⅝		8⅝	8⅝	8⅝	8⅝	8⅝	8⅝	8½	8½	8½	8½	8½	8½	8½	8½	8½	8½	8½	8½	8½	8½	8½	8½	8½	8½	8½	8½	8½	—	—
December	9½	9½		9¼	9¼	9¼	—	9⅛	9⅛	9⅛	9⅛	9⅛	9⅛	9⅛	9	9	9	9	9	9	9	9	8⅞	8⅞	8⅞	8⅞	8⅞	8⅞	8⅞	8⅞	8⅝	8⅝	9
1931																																
January	—	—		8⅝	8⅝	8⅝	8⅝	8⅝	8⅝	8⅝	—	8⅝	8⅝	8⅝	8⅛	8⅝	8⅝	8⅝	8⅛	8⅛	8⅛	8⅛	8⅛	8⅛	8¼	8¼	8¼	8¼	8¼	8¼	8¼	8¼	8¼
February	—	—		7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞
March	—	—		8⅛	8⅛	8⅛	8⅛	8	8	8	8	8	8	7⅞	8	8	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞	7⅞
April	—	—		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
May	—	—		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
June	—	—		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
July	—	—		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
August	—	—		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
September	—	—		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
October	—	—		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
November	—	—		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
December	—	—		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
1932																																
January	—	—		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
February	—	—		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
March	—	—		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
April	—	—		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
May	—	—		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
June	—	—		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
July	—	—		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
August	—	—		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
September	—	—		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
October	—	—		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
November	—	—		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
December	—	—		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Average Spot Closing Prices—Ribbed Smoked Sheets

(New York Market)

Average Price per Pound for Years 1910-1925

Year	Cents	Year	Cents	Year	Cents	Year	Cents
1910	206.60	1914	65.33	1918	60.15	1922	17.50
1911	141.30	1915	65.85	1919	48.70	1923	29.45
1912	121.60	1916	72.50	1920	36.30	1924	26.20
1913	82.04	1917	72.23	1921	16.36	1925	72.46

Average Monthly Price per Pound Since 1926

Month	1926 Cents	1927 Cents	1928 Cents	1929 Cents	1930 Cents	1931 Cents	1932 Cents
Jan.	79.50	38.75	40.25	20.14	15.24	8.34	4.38
Feb.	62.25	38.25	32.75	23.97	15.85	7.70	4.03
Mar.	59.00	41.04	26.82	24.55	15.34	7.71	3.35
Apr.	51.25	40.86	18.97	21.18	14.93	6.43	3.02
May	47.75	40.76	18.99	21.46	14.24	6.49	3.09
June	42.50	37.25	19.59	20.64	12.45	6.35	2.66
July	41.03	34.87	19.40	21.30	11.24	6.37	2.89
Aug.	48.50	35.12	19.46	20.59	9.96	5.38	3.63
Sept.	41.00	33.67	18.47	20.37	8.28	5.08	3.84
Oct.	42.50	34.32	18.83	19.67	8.20	4.87	3.65
Nov.	38.50	37.58	18.26	16.62	9.01	4.65	3.44
Dec.	38.25	40.63	17.97	16.12	9.05	4.64	3.24
Average for Year	48.50	37.72	22.48	20.55	11.98	6.17	3.49

London Closing Prices of Ribbed Smoked Sheet

(In Pence Per Pound)

Day	Sept.	Oct.	Nov.	Dec.	Day	Sept.	Oct.	Nov.	Dec.
1	2⅞	2⅝	2 15/32	2 9/16	17	2 17/32	2 5/16	2 9/16	2 15/32
2	2 27/32	—	2 7/16	2 17/32	18	—	2 11/32	2 17/32	—
3	3 1/32	2½	2 15/32	2 19/32	19	2 7/16	2⅜	2 9/16	2½
4	—	2½	2 17/32	—	20	2⅝	2 7/16	—	2 17/32
5	3 1/16	2 15/32	2 19/32	2 9/16	21	2 9/16	2 7/16	2 19/32	2½
6	3 11/32	2 5/32	—	2½	22	2 11/16	2 7/16	2 19/32	2 13/32
7	3	2 15/32	2 21/32	2 9/16	23	2 21/32	—	2 19/32	2 13/32
8	2 15/16	2 15/32	2 21/32	2½	24	2 23/32	2 7/16	2 19/32	—
9	2⅞	—	2⅝	2 13/32	25	—	2½	2 19/32	—
10	2¾	2 7/16	2 19/32	2 7/16	26	2¾	2½	2⅝	—
11	—	2 13/32	2 21/32	—	27	2 19/32	2½	—	—
12	2 11/16	2 7/16	2 11/16	2 7/16	28	2 21/32	2 17/32	2 19/32	2 15/32
13	2 19/32	2 13/32	—	2 7/16	29	2 19/32	2 9/16	2 23/32	2 7/16
14	2 23/32	2 13/32	2 19/32	2 7/16	30	2⅝	—	2 19/32	2 7/16
15	2 17/32	2 13/32	2 19/32	2 7/16	31	—	2½	—	—
16	2 19/32	—	2 19/32	2 7/16					

Average Monthly Price Per Pound

Month	1929 Pence	1930 Pence	1931 Pence	1932 Pence	Month	1929 Pence	1930 Pence	1931 Pence	1932 Pence
Jan.	9.942	7.471	4.160	3.052	Aug.	10.505	4.880	2.385	2.654
Feb.	11.875	7.948	3.823	2.760	Sept.	10.160	4.075	2.524	2.485
Mar.	12.135	7.595	3.822	2.047	Oct.	9.620	4.023	2.898	2.425
Apr.	10.490	7.391	3.082	1.876	Nov.	8.442	4.440	2.890	2.518
May	10.717	6.926	3.035	1.825	Dec.	7.958	4.516	3.115	2.444
June	10.580	6.195	3.082	1.750	Average for				
July	11065	5.648	3.048	1.875	Year	10.291	5.926	3.155	2.434

Spot Closing Cotton Prices

(Middling Upland Grade—New York Market)

Recent Daily Price Per Pound

Day of Month	Oct.	Noov.	Dec.	Day of Month	Oct.	Noov.	Dec.	Day of Month	Oct.	Noov.	Dec.
1	7.05	6.10	5.95	11	6.80	6.70	—	21	6.30	6.15	6.00
2	—	6.10	5.80	12	—	6.55	5.95	22	6.25	6.15	5.85
3	7.15	6.10	5.75	13	6.45	—	5.90	23	—	6.05	5.95
4	7.15	6.20	—	14	6.55	6.40	6.20	24	6.20	—	—
5	7.10	6.45	5.70	15	6.50	6.40	6.00	25	6.25	5.90	—
6	7.05	—	5.80	16	—	6.40	6.00	26	6.40	5.90	—
7	7.05	6.30	5.75	17	6.35	6.40	6.15	27	6.45	—	5.95
8	6.65	—	5.75	18	6.35	6.35	—	28	6.35	5.80	6.00
9	—	6.15	5.90	19	6.45	6.25	6.10	29	6.20	6.00	6.15
10	6.45	6.45	5.90	20	6.35	—	6.10	30	—	5.95	6.10
								31	6.15	—	—

Average Monthly Price Per Pound

	1929 Cents	1930 Cents	1931 Cents	1932 Cents		1929 Cents	1930 Cents	1931 Cents	1932 Cents
Jan.	20.22	17.21	10.27	6.65	Aug.	18.62	12.03	7.21	7.43
Feb.	20.21	15.62	10.96	6.85	Sept.	18.83	10.85	6.52	7.68
Mar.	20.19	15.13	10.90	6.86	Oct.	18.46	10.63	6.32	6.30
Apr.	20.29	16.39	10.19	6.16	Nov.	17.53	10.96	6.44	6.22
May	19.41	16.43	9.38	5.72	Dec.	17.28	10.02	6.24	6.00
June	18.74	14.48	9.05	5.22	Average for				
July	18.62	13.10	9.28	5.87	Year	19.03	13.57	8.56	6.41

World Stocks of Crude Rubber

ON HAND OR AFLOAT TO THE U. S.

At	ON HAND			AFLOAT			ON HAND AND AFLOAT		
	1930	1931	1932	1930	1931	1932	1930	1931	1932
Jan.	151,744	209,487	325,860	61,863	86,187	49,234	193,607	265,674	365,094
Feb.	143,863	212,533	322,117	63,404	63,680	51,728	207,267	276,513	373,845
Mar.	141,843	217,804	334,566	63,646	63,133	44,190	205,489	280,937	378,756
Apr.	148,272	228,382	343,099	63,261	56,700	40,387	211,533	285,082	383,486
May	146,149	220,799	346,231	63,168	73,564	50,453	214,347	294,363	396,684
June	151,551	225,536	345,702	59,657	69,421	43,079	210,209	294,957	388,781
July	152,091	234,822	345,927	58,326	66,873	37,894	210,327	301,695	383,821
Aug.	158,604	240,816	357,342	61,168	61,469	41,282	219,772	302,285	398,624
Sept.	169,927	254,324	365,789	60,923	62,420	46,188	230,851	316,744	411,977
Oct.	185,470	273,456	373,823	51,122	68,427	40,176	236,593	341,883	413,999
Nov.	189,925	292,493	377,996	52,538	77,443	40,876	242,463	369,936	418,875
Dec.	200,998	322,826	———	56,035	53,940	———	257,033	376,766	———

(Rubber Manufacturers' Association figures raised to 100%)

STOCKS IN GREAT BRITAIN

Stocks in London

(No. of Tons in Wharves and Warehouses, including Latex)

At end of	1930	1931	1932	At end of	1930	1931	1932
Jan.	60,434	81,093	67,166	July	81,048	81,817	48,842
Feb.	64,557	82,265	65,942	Aug.	80,931	81,560	47,079
Mar.	68,923	84,736	64,280	Sept.	83,329	79,692	44,942
Apr.	74,676	86,982	61,848	Oct.	77,647	76,778	42,327
May	77,312	86,726	56,089	Nov.	76,887	73,911	40,606
June	80,260	83,071	51,009	Dec.	78,013	69,470	———

At End of Recent Weeks

1932	First Saturday	Second Saturday	Third Saturday	Fourth Saturday	Fifth Saturday
January	69,504	68,967	68,272	67,545	67,157
February	67,410	67,824	67,314	65,923	
March	65,459	65,121	65,014	64,461	
April	63,813	64,015	63,717	63,348	61,850
May	61,411	58,101	58,606	56,504	
June	55,535	54,636	52,636	51,785	
July	50,656	50,188	49,327	49,105	48,833
August	48,980	47,713	46,985	47,052	
September	46,982	45,325	46,176	44,986	
October	44,972	44,503	43,729	43,173	42,614
November	42,114	41,528	40,952	41,025	
December	40,267	39,381	38,388	37,862	

Stocks in Liverpool

1932				
January	57,718	57,652	58,662	58,328	58,182
February	59,155	59,874	59,514	59,868	
March	60,288	60,776	60,922	60,775	
April	61,010	60,872	61,302	61,433	61,480
May	61,674	60,909	60,583	60,148	
June	60,119	59,551	58,601	58,441	
July	58,569	58,335	57,622	57,618	57,366
August	58,019	57,762	57,542	57,448	
September	58,080	57,965	58,028	58,004	
October	58,261	58,209	57,881	57,568	57,702
November	57,311	57,329	57,021	56,004	
December	55,774	55,311	54,841	54,907	

STOCKS IN PENANG AND SINGAPORE

(Stocks held by Dealers—Quantities in Long Tons)

End of	1929	1930	1931	1932	End of	1929	1930	1931	1932
Jan.	29,617	39,727	48,802	48,850	July	38,859	45,459	51,203	17,017
Feb.	32,373	44,371	49,288	46,964	Aug.	30,834	48,132	48,971	20,649
Mar.	29,437	45,657	49,590	46,591	Sept.	32,138	44,015	47,025	20,415
Apr.	26,474	48,473	45,868	39,663	Oct.	33,770	39,930	52,132	23,158
May	30,764	44,715	44,278	38,690	Nov.	30,963	41,674	46,497	25,419
June	30,403	42,451	47,517	19,770	Dec.	35,548	45,963	45,795	———

STOCKS IN OTHER CENTRES

End of 1932:	Malaya Mainland	Afloat for Europe	Holland	Colombo	Para and Manaos
Jan.	43,938	19,090	3,065	3,956	6,342
Feb.	43,695	18,920	3,093	3,591	6,641
Mar.	43,329	17,470	3,172	3,172	6,378
Apr.	42,642	15,660	3,404	3,407	6,469
June	40,184	20,240	3,274	3,727	5,885
July	38,681	21,190	2,996	3,781	5,982
Aug.	38,539	21,250	2,625	3,347	5,829
Sept.	36,346	21,040	2,246	2,834	5,823
Oct.	38,125	20,000	2,208		
Nov.	36,363	20,000			

Rims Inspected and Passed in U. S.

(Tire and Rim Association Reports)

	Total	Per Cent Balloons		Total	Per Cent Balloons
1923	23,140,620	9.6	1928	24,247,282	81.6
1924	21,863,311	19.7	1929	24,141,502	80.3
1925	26,001,864	66.3	1930	17,364,096	80.1
1926	24,199,524	76.8	1931	11,253,800	76.7
1927	19,700,068	79.1			
1932			1932		
January	810,759	89.0	July	338,725	82.2
February	726,172	84.3	August	221,918	83.8
March	648,013	81.6	September	197,999	64.5
April	652,126	69.8	October	237,498	77.7
May	657,995	74.0	November	454,947	77.5
June	499,441	82.3	December		

U. S. Tire and Tube Statistics

(All Figures Represent Thousands)

AUTOMOBILE CASINGS

Figures for Recent Years

	1924	1925	1926	1927	1928	1929	1930	1931
Production	51,633	60,845	61,237	64,439	77,944	68,726	50,965	48,739
Shipments	50,120	59,262	59,002	64,059	74,296	69,395	53,633	43,151
Inventory[2]	7,427	8,142	10,456	10,264	13,624	11,538	9,003	110,233

Figures for Recent Months

	PRODUCTION			SHIPMENTS			INVENTORY		
	1930	1931	1932	1930	1931	1932	1930	1931	1932
Jan.	4,485	3,675	3,462	4,406	3,744	3,253	11,925	8,957	7,912
Feb.	4,585	3,985	3,871	4,195	3,402	3,553	11,410	9,536	9,172
Mar.	4,863	4,063	3,671	4,717	4,122	2,954	12,513	10,014	9,878
Apr.	5,648	4,944	3,517	5,089	4,932	3,698	13,076	10,031	9,846
May	5,717	5,679	3,820	5,216	5,415	4,258	13,432	10,312	9,379
June	5,122	5,672	5,643	5,294	5,572	10,065	13,277	10,447	4,999
July	3,991	4,926	3,617	5,447	5,462	2,404	11,812	9,919	6,203
Aug.	4,166	3,906	3,089	5,175	4,960	2,655	10,848	8,896	6,659
Sept.	3,365	3,172	2,539	4,405	3,932	3,082	9,812	8,158	6,096
Oct.	3,582	2,974	2,569	3,499	2,852	1,799	9,803	8,300	6,876
Nov.	2,654	2,500	———	2,884	2,887	———	9,595	7,919	———
Dec.	2,814	2,643	———	3,361	2,871	———	9,003	7,744	———

AUTOMOBILE INNER TUBES

Figures for Recent Years

	1924	1925	1926	1927	1928	1929	1930	1931
Production	70,706	82,614	76,618	70,823	80,180	68,829	52,420	48,333
Shipments	68,106	81,004	71,591	72,896	77,127	70,592	54,938	50,021
Inventory[2]	11,052	11,313	16,200	13,692	16,117	12,807	9,999	112,121

Figures for Recent Months

	PRODUCTION			SHIPMENTS			INVENTORY		
	1930	1931	1932	1930	1931	1932	1930	1931	1932
Jan.	4,607	3,623	3,308	4,857	4,062	3,529	12,704	9,439	7,719
Feb.	4,634	3,916	3,821	4,337	3,400	2,728	13,036	9,921	8,760
Mar.	4,941	4,450	3,502	4,727	3,789	2,686	13,179	10,475	9,448
Apr.	5,510	4,617	3,225	4,848	4,636	3,385	13,784	10,413	9,441
May	5,535	5,413	3,409	5,074	5,281	3,867	13,852	10,549	8,913
June	4,950	5,358	5,279	5,265	5,397	9,019	13,612	10,504	5,174
July	3,939	4,955	2,937	5,855	5,831	2,160	11,667	9,589	5,975
Aug.	4,796	4,435	2,748	5,762	5,301	2,503	10,737	8,774	6,127
Sept.	3,817	3,449	2,601	4,541	4,150	3,098	10,065	8,095	5,753
Oct.	3,951	3,077	2,187	3,472	2,813	1,658	10,517	8,321	6,214
Nov.	2,680	2,443	———	2,788	2,594	———	10,313	8,119	———
Dec.	3,060	2,597	———	3,412	2,767	———	9,999	7,922	———

(1) Rubber Manufacturers' Association figures, raised to 100%. The Association estimates its figures to be 75% complete up until 1929 and 80% complete beginning with 1929, and that basis has been accepted when preparing the statistics in this table.

(2) Held by manufacturers at end of period indicated.

Automobile Production

	United States			Canada			Grand Total
	Total	Passenger Cars	Trucks	Total	Passenger Cars	Trucks	
1926	4,298,799	3,808,753	490,046	205,002	164,483	40,609	4,503,891
1927	3,393,887	2,938,868	453,019	179,426	146,850	32,556	3,573,313
1928	4,357,384	3,826,613	530,771	242,382	196,737	45,645	4,599,944
1929	5,358,420	4,587,400	771,020	263,295	207,498	55,797	5,621,715
1930	3,355,986	2,814,452	540,534	154,192	125,442	28,750	3,510,178
1931							
Jan.	171,848	138,317	33,531	6,496	4,552	1,944	178,344
Feb.	219,940	180,419	39,521	9,871	7,529	2,342	229,811
Mar.	276,405	231,244	45,161	12,993	10,483	2,510	289,398
Apr.	336,939	285,693	50,015	17,159	14,043	3,116	354,098
May	317,163	269,420	45,695	12,738	10,621	2,117	329,901
June	250,640	208,158	41,304	6,835	5,583	1,252	257,475
July	218,490	183,107	35,854	4,220	3,151	1,069	222,710
Aug.	187,197	155,425	31,772	4,544	3,426	1,118	191,741
Sept.	140,566	109,228	31,338	2,646	2,108	538	143,212
Oct.	80,192	58,415	21,727	1,440	761	679	81,552
Nov.	68,867	49,184	19,683	1,247	812	435	70,114
Dec.	121,533	97,897	23,636	2,432	408	2,024	123,965
Total	2,389,730	1,973,090	416,640	82,621	63,477	19,144	2,472,351
1932							
Jan.	119,344	98,785	20,541	3,731	3,112	619	123,075
Feb.	117,418	94,110	23,308	5,477	4,494	983	126,621
Mar.	118,959	99,399	19,560	8,313	6,604	1,714	127,277
May	185,149	157,756	27,933	8,221	7,269	952	193,370
June	183,092	160,330	27,754	7,112	6,308	804	190,204
July	111,139	94,705	16,434	7,472	6,773	699	118,611
Aug.	90,324	75,907	14,417	4,067	3,166	901	94,391
Sept.	84,141	64,748	19,393	2,342	1,741	601	86,483
Oct.	48,934	35,339	13,595	2,923	2,361	562	51,857

Exports of Crude Rubber from Principal Producing Countries

(Long Tons)

	BRITISH MALAYA[1]							DUTCH EAST INDIES[5]							
	Gross Exports	Imports	Gross Exports Minus Imports	Ceylon[2]	India & Burma[3]	Sarawak[4]	British North Borneo[4]	Siam[4]	Java & Madura	Sumatra E. Coast	Other D.E.I.	Indo-China[6]	Amazon Valley	All Other[4]	World Total[7]
1923	252,016	70,432	181,584	39,971	6,416	5,705	4,227	1,715	32,930	46,344	57,822	5,067	16,765	7,856	406,415
1924	259,706	108,524	151,182	39,997	7,697	6,699	4,621	2,962	42,446	54,497	80,347	6,628	23,165	9,065	429,808
1925	316,225	158,022	158,803	49,566	10,082	5,424	5,377	5,377	46,757	65,499	120,626	7,881	25,296	13,797	514,487
1926	391,323	151,243	240,085	58,962	9,874	9,155	6,079	4,027	52,186	71,413	121,351	8,203	24,298	16,017	621,590
1927	371,322	182,845	188,477	55,356	11,321	10,923	6,582	5,472	55,297	77,815	142,171	8,645	28,782	15,683	606,474
1928	409,430	149,787	259,643	57,267	10,790	10,067	6,696	4,813	58,843	82,511	121,770	9,548	21,129	10,690	633,794
1929	574,836	163,093	411,744	61,554	11,663	11,077	7,321	5,018	65,990	87,789	134,037	9,696	21,148	6,767	833,894
1930	547,043	133,876	413,167	76,978	10,782	10,209	6,781	4,251	69,755	79,396	115,254	7,665	14,260	5,651	814,241
1931	519,740	125,506	394,234	61,769	8,470	10,451	6,097	4,218	75,952	87,747	116,009	11,696	12,121	3,292	792,053
1931:															
Jan.	41,579	11,029	30,550	7,039	1,315	770	542	424	5,923	7,343	10,328	1,218	994	295	66,746
Feb.	41,951	9,672	32,279	6,365	1,041	945	542	409	4,869	7,206	9,001	1,018	1,271	217	65,163
Mar.	48,589	12,009	36,580	5,881	1,209	930	542	536	5,434	7,104	11,258	1,233	1,333	430	72,475
Apr.	43,453	9,977	33,476	4,333	641	738	455	340	6,473	8,065	8,750	327	629	388	62,617
May	44,281	10,479	33,802	4,242	622	869	455	413	7,373	6,799	10,955	793	1,110	382	67,815
June	39,397	12,115	27,282	5,098	1,086	1,138	455	337	5,856	6,696	11,380	1,019	621	351	61,319
July	43,658	11,995	31,663	4,517	715	801	536	316	6,671	7,511	10,711	859	1,565	186	66,051
Aug.	42,832	9,063	33,769	3,763	406	692	535	210	6,397	7,044	8,641	1,097	856	241	63,651
Sept.	44,336	8,369	35,967	4,029	169	701	535	218	5,577	7,358	8,389	917	745	183	64,788
Oct.	45,911	9,955	35,956	5,547	286	872	500*	338	8,086	7,882	9,547	934	1,284	238	71,467
Nov.	48,012	9,529	38,483	4,609	408	830	500*	390	7,351	8,174	7,981	781	872	233	70,562
Dec.	35,741	11,314	24,427	6,346	572	1,115	500*	287	5,942	8,562	9,059	1,550	836	208	59,399
1932:															
Jan.	44,538	10,304	34,234	4,570	732	756	500*	457	5,155	8,815	8,703	1,248	831	199	66,200
Feb.	42,008	8,008	34,000	4,472	803	696	500*	334	4,814	6,011	6,325	1,096	352	208	59,606
Mar.	39,903	6,658	33,245	3,405	284	501	500*	217	4,946	6,863	6,252	928	715	77	57,933
Apr.	36,670	4,682	31,988	3,046	365	459	500*	130	6,722	6,090	4,856	913	487	99	55,655
May	40,297	5,677	34,620	4,140	304	595	500*	118	6,552	6,551	6,013	949	416	278	61,036
June	36,566	5,665	30,901	3,620	359	481	500*	166	5,610	7,516	5,507	1,231	394	139	56,424
July	40,723	5,346	35,377	3,125	99	442	500*	184	5,779	6,257	6,145	974	232	141	59,255
Aug.	39,367	7,371	31,996	5,585	129	506	500*	300	4,803	4,882	7,244	1,164	303	140*	57,552
Sept.	41,973	8,869	33,104	4,361	122	614	500*	340	3,858	6,485	7,664	1,632	318	140*	59,138
Oct.	37,931	9,798	28,133	3,563	139	583	500*	428	4,022	7,051	8,944	779	300*	140*	54,582
Nov.	40,098	10,072	30,026	4,450		683	500*	371	4,438	6,350	9,226	1,197	300*	140*	

(1) Malayan net exports cannot be taken as production, since imported rubber is largely wet native rubber, which is reduced about one-third in weight by remilling; rubber exported as latex is not included which on a basis of 3½ pounds per gallon amounted to 115 tons in 1923, 1,117 in 1924, 3,618 in 1925, 3,263 in 1926, 2,439 in 1927, 1,437 in 1928, 2,670 in 1929, and 1,274 in 1930. (2) Ceylon Chamber of Commerce statistics until 1926; rubber exported as latex is not included—such shipments were equivalent to 18 tons in 1923, 93 tons 1924, 6 tons 1925, 20 tons 1926, about ½ ton in 1927, and 1 ton in 1928, and practically none in 1929, 1930 and 1931. (3) Official statistics. (4) Imports into Singapore and Penang. (5) Exports from "Other D.E.I." are chiefly wet native rubber, which is reduced about one-third in weight by remilling; rubber exported as latex is not included which on a basis of 3½ pounds per gallon amounted to 2,342 tons in 1923, 1,008 tons 1924, 2,239 tons 1925, 44 tons in 1926, 84 tons in 1927, 1,459 tons in 1928, 1,302 tons in 1929, and 2,656 tons in 1930. (6) Calculated from official import statistics of principal consuming countries, viz., United States, United Kingdom, France, Germany, Belgium and Netherlands, and includes guayule rubber. (7) This total includes the third column for British Malaya, "Gross Exports minus Imports," and all the figures shown for the other territories. *Figure is provisional; final figure will be shown when available.

Net Imports of Crude Rubber into Principal Manufacturing Countries

(Long Tons)

	United States[1]	United Kingdom	France (h)	Germany	Canada (ac)	Japan (da)	Italy	Russia (ce)	Australia (cd)	Belgium (d)	Netherlands	Scandinavia (abcdf)	Spain (g)	Czechoslovakia (abcd)	World Total
1919	238,407	42,671	17,685	5,584	6,395	9,753	9,894	75	1,002	3,995	2,771	3,149	2,418	9	343,803
1920	249,530	56,844	13,885	11,890	11,746	5,297	6,123	62	1,815	3,540	5,510	2,292	2,008	567	371,409
1921	179,736	42,087	15,135	21,920	8,124	21,712	3,906	165	1,014	1,705	1,022	1,279	2,245	569	300,620
1922	296,594	11,724	24,352	27,546	9,207	15,924	6,430	2,493	2,643	172	—3,807	1,778	589	567	396,222
1923	301,527	12,700	27,392	18,519	15,277	15,272	8,489	2,986	1,649	2,184	792	2,528	630	1,128	409,173
1924	319,103	—11,550	30,446	22,727	14,299	19,571	3,764	2,346	3,124	2,688	—807	3,178	944	1,370	416,203
1925	385,596	4,061	32,956	33,937	19,682	11,117	11,412	7,088	4,757	2,930	875	3,149	1,155	1,558	520,274
1926	399,981	84,865	34,240	22,775	20,229	18,125	9,809	6,529	9,021	2,498	2,670	4,046	1,299	1,870	617,957
1927	403,472	60,249	34,271	38,892	26,405	20,521	11,351	12,018	9,490	6,482	636	4,224	2,055	2,672	632,768
1928	407,572	4,846	36,498	37,855	30,447	25,621	12,483	15,184	8,430	7,958	2,243	4,418	3,178	3,138	599,771
1929	528,608	122,675	55,093	49,275	35,453	34,284	17,169	11,774	15,886	9,445	3,022	6,440	864	4,650	894,638
1930	458,036	120,069	68,503	45,488	28,793	33,039	18,639	16,387	5,354	10,635	2,924	7,710	2,400	4,468	822,445
1931	475,993	86,170	46,466	39,688	25,261	43,483	10,149	30,671	7,649	11,009	2,220	6,360	2,605	7,717	794,641
1931:															
Jan.	34,873	9,730	5,954	3,847	1,709	2,861	1,036	1,775	601	986	348	464	240	635	65,059
Feb.	32,572	12,226	4,510	3,374	1,927	3,264	1,393	1,022	495	785	157	476	201	366	62,768
Mar.	37,960	12,335	4,386	3,545	3,012	2,323	418	2,581	435	862	346	400	392	507	69,452
Apr.	42,212	9,440	4,346	3,054	2,070	3,478	528	1,450	457	515	333	495	208	324	65,910
May	33,271	8,212	2,880	3,231	2,748	3,755	1,023	1,034	884	1,153	86	495	180	711	58,663
June	43,730	5,636	4,002	3,504	2,112	2,988	1,462	3,279	1,112	1,058	272	577	207	607	70,546
July	42,293	5,366	3,301	3,226	2,592	3,065	809	3,141	627	1,507	41	429	145	1,074	67,816
Aug.	36,709	5,030	3,393	2,889	2,304	3,780	912	3,137	283	955	—57	321	160	413	60,129
Sept.	37,571	5,468	4,420	4,227	1,535	5,556	698	2,335	269	1,015	191	571	99	499	64,449
Oct.	39,820	5,775	3,909	3,220	1,567	3,980	571	4,076	765	792	185	710	193	695	66,258
Nov.	43,659	2,550	2,669	2,621	1,283	3,340	545	2,417	934	729	183	745	297	954	62,876
Dec.	51,323	4,402	2,696	2,950	2,452	5,093	859	4,474	787	652	135	677	283	932	77,715
1932:															
Jan.	32,028	3,248	2,588	3,303	1,746	5,782	627	3,258	622	521	479	840	462	197	55,701
Feb.	26,483	5,930	2,898	4,356	1,723	6,781	1,189	2,931	758	506	500	708	313	306	55,382
Mar.	43,361	3,585	2,482	3,436	2,588	5,398	1,423	2,745	1,211	721	112	456	359	644	68,521
Apr.	36,326	6,826	2,956	3,737	1,600	3,684	1,083	764	1,549	847	348	474	417	1,259	61,870
May	32,818	1,110	2,277	3,447	1,416	3,917	1,033	3,743	2,048	617	286	707	272	350	54,041
June	39,136	1,853	3,666	3,405	2,834	2,834	1,534	5,291	1,421	449	127	578	196	280	63,604
July	30,494	4,081	3,125	3,380	1,529	2,544	1,116	1,735	624	723	—214	784	258	1,207	51,386
Aug.	32,650	6,672	4,919	4,006	970	3,390	1,615	1,740	751	1,211	—66	611	210	557	59,236
Sept.	26,865	5,688	5,845	3,674	2,770	5,878	971	435	625	964	103	534	267	406	55,025
Oct.	34,748	4,627	4,715	4,177	1,207	4,563	510		569	627	553	537		986	
Nov.	27,689	5,836		3,577							375				

a—Including gutta percha. b—Including balata. c—Re-exports not deducted in monthly statistics. d—Including some scrap and reclaimed rubber. e—Official statistics of rubber imports by Soviet Russia. f—Including Norway, Sweden, Denmark and Finland. g—United Kingdom and French exports to Spain except in years prior to 1925. h—French imports have been reduced 12 per cent in order to eliminate imports of gutta percha and to reduce to basis of net weight. [1]United States imports of guayule are included in this compilation. *Figure is provisional; final figure will be shown immediately it becomes available.

Domestic Production of Miscellaneous Rubber Goods

	Rubber Proofed Fabrics	Rubber Heels	Rubber Soles	Mechanical Goods Shipments
	Yards	Pairs	Pairs	Dollars
1924	25,020,000	186,279,000	(1)	$48,615,000
1925	28,988,000	206,970,000	16,211,620(2)	64,877,000
1926	29,328,000	183,312,000	12,253,000	76,789,000
1927	37,372,000	201,014,000	27,160,000	68,625,000
1928	41,179,000	235,170,000	37,645,000	69,114,000
1929	50,731,000	232,126,000	34,499,000	74,770,000
1930	42,681,000	178,059,000	29,514,000	58,465,000
1931	36,973,000	176,406,000	34,017,000	41,885,000
1932:				
January	2,184,000	12,317,000	3,411,000	2,463,000
February	2,448,000	14,487,000	3,461,000	2,446,000
March	2,463,000	16,368,000	3,953,000	2,638,000
April	2,092,000	11,737,000	2,292,000	2,613,000
May	1,748,000	10,259,000	2,488,000	2,542,000
June	2,243,000	11,299,000	2,461,000	2,672,000
July	2,013,000	9,868,000	2,419,000	2,024,000
Aug.	2,952,000	11,073,000	2,599,000	2,152,000
September	4,510,000	14,205,000	4,054,000	1,975,000
October	4,918,000			2,192,000

(1) Not available; (2) Last 9 months only.
Source: "Survey of Current of Business of the Department of Commerce."

United States Imports of Guayule, Balata, Jelutong, Liquid Latex

(All quantities in Long Tons)

	Guayule		Balata		Jelutong		Liquid Latex (1)	
	Tons	Dollars	Tons	Dollars	Tons	Dollars	Tons	Dollars
1919	1,430	760,690	727	937,038	8,332	2,213,964	—	—
1920	758	845,985	1,064	1,260,043	5,672	2,068,501	—	—
1921	58	26,945	814	1,077,859	1,745	851,393	—	—
1922	127	57,040	812	978,765	2,335	403,812	—	—
1923	1,155	542,227	700	898,524	4,565	853,308	—	—
1924	1,356	536,392	464	568,456	6,165	1,237,100	2,157	864,059
1925	3,781	1,803,443	517	574,750	6,749	1,642,531	3,853	3,587,810
1926	4,305	2,562,096	354	327,213	7,263	3,127,757	3,388	4,680,386
1927	5,018	2,674,957	582	447,246	7,785	2,448,857	1,116	876,077
1928	3,075	1,755,685	731	430,855	7,552	2,540,059	4,167	2,185,579
1929	1,231	545,175	725	566,964	8,203	2,458,136	3,728	1,787,997
1930	1,996	347,388	501	422,684	5,907	1,403,244	4,449	1,506,804
1931	—	—	1,208	411,692	5,777	1,019,010	4,650	884,355
1932:								
Jan	—	—	54	14,095	633	81,396	331	40,613
Feb.	—	—	100	24,702	558	84,914	439	52,183
Mar.	—	—	114	20,623	460	59,299	391	44,585
Apr.	—	—	46	10,909	317	44,165	551	46,397
May	—	—	42	9,863	566	68,028	141	27,449
June	—	—	38	9,483	330	47,077	309	28,800
July	—	—	26	7,934	372	52,116	218	37,327
Aug.	—	—	36	8,885	367	46,926	540	59,178
Sept.	—	—	11	2,261	216	27,265	297	46,380
Oct.	—	—	84	17,451	349	48,816	711	69,053
Nov.	—	—	134	15,983	163	20,296	526	70,785
Dec.								

(1) Latex import figures not available before 1924.

Reclaimed Rubber in the United States

(All Quantities in Long Tons)

	Consumption					Consumption				
Year	Production	Tons	% to Crude	Stocks*	Year	Production	Tons	% to Crude	Stocks*
1921	36,725	41,851	24.1	.....	1926	180,582	164,500	45.9	23,218
1922	57,284	54,488	19.3	.....	1927	189,144	178,471	47.6	24,980
1923	74,766	69,594	22.7	.....	1928	208,516	223,000	50.4	24,785
1924	86,679	76,072	22.4	.....	1929	218,954	226,583	48.4	27,464
1925	132,930	127,105	35.6	13,208	1930	157,967	153,497	40.8	22,000
1931:									
Jan.	10,349	10,725	37.6	22,429	July	11,393	11,447	35.8	17,720
Feb.	10,871	10,800	37.5	18,578	Aug.	10,110	9,972	36.2	17,165
Mar.	12,998	12,524	38.3	18,275	Sept.	9,629	8,932	37.6	17,226
Apr.	12,267	11,745	35.0	18,356	Oct.	9,482	8,126	36.6	17,741
May	13,478	13,103	34.6	18,088	Nov.	7,892	7,492	32.6	17,662
June	14,066	13,045	34.4	18,505	Dec.	8,876	6,812	31.8	19,257
1932:									
Jan.	8,753	8,440	30.2	18,712	July	5,417	5,131	18.1	16,353
Feb.	8,731	8,332	27.7	18,659	Aug.	3,264	4,382	18.6	14,629
Mar.	8,613	7,420	26.7	19,721	Sept.	5,308	5,235	23.2	14,059
Apr.	5,561	5,555	21.6	21,525	Oct.	6,605	5,494	26.1	13,911
May	5,024	6,070	20.8	18,889	Nov.	6,542	5,234	23.9	14,047
June	5,923	7,031	18.0	16,870	Dec.				

*Stocks on hand at the end of month or year. Exports of reclaimed rubber, not shown in this table, amounted to 8,540 tons in 1927, 9,577 tons in 1928, and 12,869 tons in 1929.

(Rubber Manufacturers' Association figures raised to 100%)

REVIEW DESK

Books, New Publications, Catalogues, Etc.

PROCEEDINGS OF THE THIRTY-FIFTH ANNUAL MEETING. American Society for Testing Materials. 2 vols. Philadelphia, Pa. 1932.

Part I of the 1932 *Proceedings* contains the annual reports of the many Society committees and the technical papers and standards appended thereto. The annual address of the president, entitled "Research and the American Society for Testing Materials," and the report of the executive committee are also included. The volume includes also 85 tentative standards issued or revised in 1932, several of them pertaining to rubber products, as well as the many tentative revisions in standards. The total number of pages included in Part I is 1071.

Part II of the *Proceedings* includes the many technical papers presented at the annual meeting and discussions thereon. By including in the *Proceedings* the extensive oral and written discussions of the papers, there is retained in permanent form the views of many technologists on the subjects. Part II comprises 824 pages.

Copies of the *Proceedings* can be secured from A. S. T. M. Headquarters, 1315 Spruce Street, Philadelphia, Pa. Price for each part, $5.50, paper binding; $6.00, cloth; $7.00, half-leather.

EFFECTIVE CREDIT MANAGEMENT. Policyholders Service Bureau. Metropolitan Life Insurance Company. New York City, N. Y. 1932. 24 pp. For free distribution.

The report presents factual information relating to specific phases of credit management, as described by the practices of a number of manufacturers and wholesalers in various industries. The information deals with such subjects as investigating credits and sources of information, analyzing financial statements, terms of sale, establishing limits of credit, effecting collections and similar problems.

MAKE MORE MONEY MERCHANDISING MAINTENANCE. The Shop Equipment Associations. 38 pp. 1932. For free distribution.

This manual is built around the theme "Make More Money Merchandising Maintenance" and emphasizes in a dramatic manner the importance of the maintenance business and the leading part which the well-equipped shop plays in the development of that business. Many jobbers saw first copies of the publication at the Joint Trade Show of the M. E. M. A. and N. S. P. A., and W. C. Allen, chairman of the Shop Equipment Associates committee, was invited to present it at one of the general convention sessions of the M. E. W. A. as well as at a meeting of the 21 M. E. W. A. regional presidents.

The importance of the maintenance market is emphasized in a number of ways. No matter what happens in the new car field in 1933 the maintenance market will continue to be the biggest source of profits. If more new cars are bought the size of the maintenance market will increase; if fewer new cars are bought, the continued use of cars now registered will build demand for more maintenance services because all of these cars are getting older. On January 1, 1930, the average car was 3.58 years old; on January 1, 1931, it was 3.85 years old, and on January 1, 1932, the average age of all cars registered was 4.18 years old.

In presenting the manual, Shop Equipment Associates emphasize that it is more than a presentation of the need for better shop equipment. It is a complete picture of the entire maintenance field which shows the profits which can be made out of the sales of parts and labor when shops are properly equipped. The manual does point out effectively, however, that modern equipment is the key to success in all maintenance work. Inasmuch as it has been prepared specifically for jobbers and jobber salesmen it illustrates that the "shop equipment minded" jobber is usually the most successful distributor of all types of automotive merchandise; that the "shop equipment minded" jobber salesman usually leads in the sales of all types of automotive merchandise; and that the "shop equipment minded" dealer gets the biggest share of all kinds of maintenance business.

Arrangements have been made to keep the manual alive by monthly mailings of "blow-ups" of the double-spreads on each of the 14 major maintenance services so that this cooperative effort on the part of the manufacturers will continue to bolster the sales efforts of the jobbers over an extended period of time.

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The RUBBER AGE

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Statistical Service

EVERY keen-minded executive knows the value of accurate and efficiently compiled statistics. Properly formulated, they represent the health charts of any industry or business project. Rubber statistics are available from several sources, but in many instances are not effectively used because of the lack of knowledge on the part of rubber executives as to proper sources of accurate information. Mr. Holt, the esteemed chief of the Rubber Division of the Department of Commerce, has outlined in a special article in this issue of THE RUBBER AGE, the various sources of information available to the industry along accurate statistical lines, and his article should be of keen and valuable interest to those whose duties are to record and observe trends in the pulse-beats of the industry.